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TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

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Number 43
December 1979

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NOTICE:

This December 1979 issue carries the Index of Compounds and Index of Institutions and Investigators cumulated since Issue No. 1. These indexes will NOT be reprinted.

Commencing with the January 1980 issue of TOX-TIPS, the indexes will be cumulated on the schedule followed previously.

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TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHEW Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NCI Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches of the National Library of Medicine's on-line data bases.

Input to TOX-TIPS is submitted on Smithsonian Science Information Exchange (SSIE) Notice of Research Project forms included in each TOX-TIPS issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt. After the project description and related data are published, the information is relayed to SSIE for inclusion in that national database of information on research-in-progress.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

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SUPPORTING ORGANIZATION
American Petroleum Institute
2101 L Street, N.W.
Washington, D. C. 20037

SUPPORTING ORGANIZATION NUMBER(S)
Contract No: PS-37
and/or
Control No:

PROJECT TITLE
Carcinogenic Bioassay of New and Used Lubricants

INVESTIGATOR(S)
Raymond R. Suskind, M.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Department of Environmental Health

PERFORMING ORGANIZATION
Name and Address. Including Zip Code.
Kettering Laboratory
University of Cincinnati
3223 Eden Avenue
Cincinnati, OH 45267

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY

Mouse skin painting studies will be conducted on solvent refined and dewaxed paraffinic base stocks used in lubricating oils. Five paraffinics will be tested with SUS 100°F viscosities of 70, 150, 350, 500 and 900. Groups of 50 C3H/HeJ mice will be treated twice weekly with neat samples via calibrated dropper for 24 months or until tumor appearance. Observation will continue after the treatment period until imminent death of each survivor whereupon the animals will be autopsied. If tumors occur, they and any suspicious skin lesions will be categorized upon histopathologic examination. Time to tumor will be estimated and tumor locations specified. Complete histologic examination of major organs will be conducted on half the animals and of any suspicious internal lesions on all animals.

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

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Cocarcinogenic effects of n-alkanes and ultraviolet light on mice.
J Natl Cancer Inst; VOL 58, ISS 4, 1977, P1099-101

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BR J IND MED; 34 (3). 1977 208-215

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TISSEUIL H ; CHEVALIER J ; BLAISE F ; THUREL C ; TURPIN A
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ANN MICROBIOL (PARIS); 129B (3). 1978. 437-450.

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CLIN TOXICOL; 11 (4). 1977 (RECD 1978) 423-426

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[Prevention of suppurative diseases when the hands are contaminated with lubricating oils, soot, carbon black and coal dust]
Klin Khir, ISS 12, 1976, P56-7

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Washington, D. C. 20037

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: PS-37
and/or
Control No:

PROJECT TITLE:
Carcinogenic Bioassay of New and Used Lubricants

INVESTIGATOR(S):
Raymond R. Suskind, M.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Department of Environmental Health

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
Kettering Laboratory
University of Cincinnati
3223 Eden Avenue
Cincinnati, OH 45267

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

Mouse skin painting studies will be conducted on solvent refined naphthenic base stocks used in lubricating oils. Two naphthenics will be tested with SUS 100°F viscosities of 80 and 2000 (or 90 for SUS 210°F). Groups of 50 C3H/HeJ mice will be treated twice weekly with neat samples via calibrated dropper for 24 months or until tumor appearance. Observation will continue after the treatment period until the imminent death of each survivor whereupon the animals will be autopsied. If tumors occur, they and any suspicious skin lesions will be categorized upon histopathologic examination. Time to tumor will be estimated and tumor locations specified. Complete histologic examination of major organs will be conducted on half the animals and of any suspicious internal lesions on all animals.

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Vopr. Reakt. Org. Norme Patol., Mater. Nauchn. Konf.; 1974,62-4

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Finnigan Spectra; VOL 6, ISS 2, 1976,3-7

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SCIENCE; 200:329-330,1978; CA 89-54198

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SUPPORTING ORGANIZATION NUMBER(S):

Contract No: PS-37
and/or
Control No:

PROJECT TITLE:

Carcinogenic Bioassay of New and Used Lubricants

INVESTIGATOR(S):

Raymond R. Suskind, M.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Department of Environmental Health

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

Kettering Laboratory
University of Cincinnati
3223 Eden Avenue
Cincinnati, OH 45267

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

Mouse skin painting studies will be conducted on a composite motor oil. Both new and used samples of this oil will be tested. Used samples will be generated from automobiles which have been driven 5000 miles on this oil. Groups of 50 C3H/HeJ mice will be treated twice weekly with neat samples via calibrated dropper for 24 months or until tumor appearance. Observation will continue after treatment period until the imminent death of each survivor whereupon the animals will be autopsied. If tumors occur, they and any suspicious skin lesions will be categorized upon histopathologic examination. Time to tumor will be estimated and tumor locations specified. Complete histologic examination of major organs will be conducted on half the animals and of any suspicious internal lesions on all animals.

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Gig Tr Prof Zabol, ISS 7, 1979, P47-9

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Command
Ft. Detrick
Frederick, MD 21701

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: DAMD 17-79-C-9160
and/or
Control No:

PROJECT TITLE:
Chemical Characterization and Toxicologic Evaluation of Airborne Mixtures

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Environmental Protection
Research Division
U. S. Army Medical Bioengineering
R & D Laboratory

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Battelle Memorial Institute
Pacific Northwest Laboratories
P. O. Box 999
Richland, WA 99352

PERIOD FOR THIS NRP:
Start Date: October, 1979
End Date: September, 1982
Annual Funding:

PROJECT SUMMARY:

The objectives of the program are to characterize the chemical components of two smoke aerosols generated by vaporization of light lubricating oil or combustion of red phosphorus/butyl rubber, and to provide a comprehensive definition of the biologic effects of the smokes to mammalian systems under conditions which simulate potential troop exposure. Sprague-Dawley rats will be exposed to smoke aerosols in inhalation chambers. These studies will elucidate the relative toxicologic importance of dose, duration of exposure, interval between repeated exposures, and recovery duration. The three phases of the program include acute, repeated exposures of several concentrations with various intervals between exposures, and a 13-week subchronic study. Response criteria for toxicologic and pathologic disturbances produced by these smokes will include immunologic, cellular and biochemical changes, alterations in pulmonary function, and neurobehavioral changes.

CAS Registry No.

Red phosphorus	7723-14-0
Butyl rubber	9010-85-9

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Gig Tr Prof Zabol, ISS 4, 1975, P28-30

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ZDRAVOOKHR BELORUSS; 19 (11). 1973 (RECD 1974) 38-40

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Toxicology Research Projects Directory, Vol.04 iss.08 1979

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Command
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Frederick, MD 21701

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
Chemical Characterization and Toxicologic Evaluation of Airborne Mixtures

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY. SCHOOL OR DIVISION
Environmental Protection
Research Division
U. S. Army Medical Bioengineering
R & D Laboratory

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
Oak Ridge National Laboratory
Biology Division
P. O. Box Y
Oak Ridge, TN 37830

PERIOD FOR THIS NRP:
Start Date: July, 1979
End Date: June, 1982
Annual Funding:

PROJECT SUMMARY:

The objectives of the program are to characterize the chemical components of a smoke aerosol generated by vaporization of diesel fuel, and to provide a comprehensive definition of the biologic effects of the smoke to mammalian systems under conditions which simulate potential troop exposure. Sprague-Dawley rats will be exposed to smoke aerosols in inhalation chambers. These studies will elucidate the relative toxicologic importance of dose, duration of exposure, interval between repeated exposures, and recovery duration. The three phases of the program include acute, repeated exposures to several concentrations with various intervals between exposures, and a 13-week subchronic study. Response criteria for toxicologic and pathologic disturbances produced by smoke will include immunologic, cellular and biochemical changes, and alterations in pulmonary functions.

CAS Registry No.
Fuels, diesel, No. 2 68476-34-6
Petroleum products, diesel oil 68334-30-5

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024Oak Ridge, TN 37830 — Phone: 615- 576-1743.

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Acute tubular necrosis after exposure to diesel oil.
Br Med J; VOL 2, ISS 6183, 1979, P177

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Toxicology Research Projects Directory, Vol.04 iss.10 1979

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Study of effects of smoke on experimental animals.
LABDEV J SCI TECHNOL PART B LIFE SCI; 12 (2). 1974 (RECD 1975) 78-80

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SUPPORTING ORGANIZATION:
National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: VMH-M21-666

PROJECT TITLE:
Industrial Hygiene/Mortality Study of Workers Exposed to Selenium

INVESTIGATOR(S):
Mr. Kenneth Wallingford

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date: October, 1979
End Date: January, 1983
Annual Funding:

PROJECT SUMMARY:

The U. S. produces and uses approximately 1.4 million pounds of selenium annually. All primary selenium producers are electrolytic copper refiners. Selenium compounds are manufactured by approximately 10 producers at various locations within the U.S. Chronic Selenium poisoning in test animals has been shown to have widespread effects with lesions occurring in all the internal organs. Selenium and its compounds have been shown to be carcinogenic in rats, and teratogenic for chicks, sheep, pigs, and cattle. In addition, chronic selenium poisoning has produced adverse effects in the reproductive system in rats, sheep, cattle, and other grazing animals. In industrial situations, workers exposed to elemental selenium in the form of fine dust have developed nosebleeds, loss of the sense of smell, inflammation of respiratory mucous membranes, and dermatitis.

The purpose of this project is to conduct an industrial hygiene/retrospective cohort mortality study of workers exposed to selenium to evaluate the long term effects. The first phase of the investigation will be a study to determine the extent of exposure, to characterize the work environment, and to assess the feasibility of conducting the mortality portion of the study. The second phase, if initiated, will be a comprehensive industrial hygiene characterization and retrospective mortality study of the selected site(s).

CAS Registry No.

Selenium 7782-49-2

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Selenium and heart disease. II. Selenium and other trace metal intakes and heart disease in 25 countries
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Toxicology Research Projects Directory, Vol.04 iss.05 1979
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Acta Pharmacol Toxicol [Suppl] (Kbh); VOL 41, ISS 2, 1977, P427

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Antioxidants and cancer. Part VI. Selenium and age-adjusted human cancer mortality.
Arch Environ Health; VOL 31, ISS 5, 1976, P231-5

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Geographic distribution of selenium in human milk.
ARCH ENVIRON HEALTH; 30 (5). 1975 230-233

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Proc. Malays. Biochem. Soc. Conf.; VOL 4,, 1977,87-94

Whanger PD
Cadmium effects in rats on tissue iron, selenium, and blood pressure; blood and hair cadmium in some Oregon residents
EHP, Environ. Health Perspect.; VOL 28,, 1979,115-21

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SUPPORTING ORGANIZATION:

National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No: VMH-C22-662

PROJECT TITLE:

Epidemiologic Study of Workers in Petroleum Refineries and Petrochemical Plants

INVESTIGATOR(S):

Dr. Richard Waxweiler

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:

Start Date: October, 1979
End Date: February, 1981
Annual Funding:

PROJECT SUMMARY

An NCI study examined the cause-specific mortality experience of workers who were active members of Oil, Chemical and Atomic Workers International Union (OCAW) Locals in Texas at the time of death. Proportional Mortality Ratios (PMR's) for stomach and brain cancers, for leukemia, and for multiple myeloma were elevated among white males who worked in petroleum refineries and petrochemical plants and were Union members for at least 10 years. In particular, increased relative frequencies of stomach and brain cancer deaths were found among white male members who were employed at a refinery in Port Arthur (Plant A). In addition, PMR's were elevated for lung cancer among nonwhites and stomach cancer in both racial groups employed at another refinery in Port Arthur (Plant B).

Observed numbers of deaths from leukemia, and from cancers of the kidney and skin were greater than expected among white males at Plant B, but observed numbers were very small.

A third refinery in Beaumont, Texas, was found to have excess lung and brain cancers. A case-control study will be done as a timely second step to examine excess deaths from certain cancers in greater detail.

Detailed work histories will be obtained for each case control to determine length of employment in these plants, specific job(s) held, work location(s) within the plants, and any other employment or exposure information that is available.

The case control study may be followed by a more definitive cohort study.

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

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Gig. Tr. Prof. Zabol.; ISS 1, 1979,9-12

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Toxicology Research Projects Directory, Vol.04 iss.04 1979
Epidemiology Research Projects Directory, 1979

NOTICE OF RESEARCH PROJECT
TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION:

National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No: VMH-M22-664

PROJECT TITLE:

Mortality Study of Potash Workers

INVESTIGATOR(S):

Dr. Richard Waxweiler
Mr. Dennis Roberts

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:

Start Date: October, 1979
End Date: September, 1981
Annual Funding:

PROJECT SUMMARY:

The long term effects of diesel exposures need to be thoroughly evaluated as diesel fuel begins to take on a more important role in our country's energy policy. An occupation believed to have fairly high levels of diesel exposures is underground mining. Although most mines would have many other confounding exposures such as asbestos, radon daughters, and arsenic, potash mines have presumably non-carcinogenic environments as determined by a previously conducted retrospective cohort mortality study of 2743 underground and 1143 surface potash miners (Waxweiler et al., J. Occup. Med. 1973). Diesels were introduced in these mines in the early 1950's. By extending the epidemiologic study from 1967 to include follow-up through 1978, a 25 year latency period could be evaluated for many of the miners. In-depth industrial hygiene surveys would characterize current worker exposures to diesel exhaust, and evaluate existing engineering controls and work practices. The control technology section of NIOSH has an analogous project to evaluate diesel exposures underground in relation to such parameters as duty time and preventive maintenance.

CAS Registry No.

Potash (potassium oxide)	12136-45-7
Potash (potassium carbonate)	584-08-7
Fuels, diesel, No. 2	68476-34-6
Petroleum products, diesel oil	68334-30-5

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BEHAVIORAL TOXICITY OF MILITARY MATERIALS
Toxicology Research Projects Directory, Vol.04 iss.12 1979

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SUPPORTING ORGANIZATION:
National Institute for Occupational
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SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMH-W22-665

PROJECT TITLE:
Spontaneous Abortions Among Employed Women

INVESTIGATOR(S):
Dr. Bruce Albright
Dr. Sanford Leffingwell

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date: October, 1979
End Date: March, 1982
Annual Funding:

PROJECT SUMMARY:

NIOSH periodically receives inquiries about complaints of fetal loss from women employed in various work places. Beyond the generally accepted estimate of gynecologists that about one pregnancy in ten terminates in spontaneous abortion and one well-controlled study in Hawaii with few white participants, there are no reliable standards to which we can compare the experience of a group of women. Furthermore, effects of prior abortions on the probability of successful completion of a present pregnancy are not well documented.

This study would seek to establish rates for spontaneous abortions in a variety of working populations through the following steps:

1. Concurrent literature review and consultation with experts or organizations interested in pregnancy outcome to assure that this information is not already available.

2. Feasibility study to ascertain whether large national organizations with sizable constituencies of young women would assist in this type of study. Organizations for consideration may include the National Education Association; the International Ladies Garment Workers Union; the American Federation of State, County, and Municipal Employees; and female federal employees. We would be looking for cohorts with differing socio-economic and regional backgrounds but without high exposures to toxic agents.

3. If a cohort could be found, members planning to become pregnant would be asked to register with NIOSH. Each woman would be given a log book in which to record each menstrual period and a home pregnancy detection kit. Each participant would be given a questionnaire dealing with demographic data, past pregnancy history, etc.

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024Oak Ridge, TN 37830 — Phone: 615- 576-1743.

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GIG SANIT; (6). 1978 27-31

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Pediatr., Akush. Ginekol.; ISS 2, 1979,45-6

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Toxicology Research Projects Directory, Vol.04 iss.06 1979

Cohen EN
ANESTHETIC EXPOSURE AND HEALTH OF DENTAL PERSONNEL
Toxicology Research Projects Directory, Vol.04 iss.05 1979
Epidemiology Research Projects Directory, 1979

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SUPPORTING ORGANIZATION

National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S)

Contract No:
and/or
Control No: VMH-G21-669

PROJECT TITLE

Mortality, Medical and Industrial Hygiene Study of Workers Exposed to Nitroglycerin

INVESTIGATOR(S)

Mr. Gordon Reeve
Mr. Robert Rinsky
Dr. William Halperin

DEPARTMENT/SPECIALTY SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION

Name and Address, Including Zip Code.

National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP

Start Date: October, 1979
End Date: September, 1982
Annual Funding:

PROJECT SUMMARY

About 8000 workers are exposed yearly to nitroglycerin (NG) during its manufacture. Not only is work with this agent hazardous because it is explosive, but workers also suffer from acute toxicity (headaches due to vasodilation), may have excessive numbers of sudden deaths while employed (possibly from coronary vasospasm), and may suffer from excessive cardiovascular mortality after retirement.

An opportunity exists at the Radford Arsenal in Virginia to study a cohort of 37 current workers and a much larger number of former nitroglycerin workers. A cohort mortality study (Va. deaths as comparison) would be valuable to establish the fact of excess death during employment and after separation. Since the plant physician has done periodic electrocardiograms and excluded workers with abnormalities from NG exposure, a potential exists to compare the mortality of NG workers with ECG abnormalities to NG workers with normal ECGs. This comparison would not be meaningful unless another group of non-nitroglycerin workers is followed in the same way.

These same groups would be used to determine if there is a characteristic NG abnormality on the ECG and also if abnormalities are present at the same rate in non-NG workers.

If there is excess mortality in workers long after separation from exposure, it will be valuable to investigate its cause by comparing heart disease risk factors in NG retirees compared with other retirees. Risk factors such as blood pressure, lipids, etc. would be evaluated.

CAS Registry No.
Nitroglycerin 55-63-0

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

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JOM; VOL 21, ISS 8, 1979, P553-6

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Pathogenesis of cardiac angina-like fit in dynamite factories
Tokyo Joshi Ika Daigaku Zasshi; VOL 43, ISS 10, 1973,832-7

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SUPPORTING ORGANIZATION NUMBERS:
Contract No:
and/or
Control No: VMH-G21-672

PROJECT TITLE:
Medical and Industrial Hygiene Study of Workers Exposed to 4,6-Dinitro-2-sec-butylphenol (DNBP)

INVESTIGATOR(S):
Dr. William Halperin
Mr. Michael Crandall

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date: October, 1979
End Date: May, 1981
Annual Funding:

PROJECT SUMMARY:

The herbicide 4,6-Dinitro-2-sec-butylphenol (DNBP) has been demonstrated to have adverse effects such as testicular atrophy in studies with rats (Hall, L. et al. Subchronic and Reproductive Toxicity of Denoseb. Toxicol. Appl. Pharm. 45(1):235-236, 1978). If a cohort of sufficient size can be located, exposed individuals and appropriate controls will be interviewed, examined, and tested for testicular as well as other effects.

CAS Registry No.
4,6-Dinitro-2-sec-butylphenol (DNBP) 88-85-7 TOX-TIPS DECEMBER 1979 43-23

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

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Ambio 7(5-6): 211-217 1978 (11 References)

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SUPPORTING ORGANIZATION:
National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMH-G21-673

PROJECT TITLE:
Mortality Study of Workers Exposed to Carbon Monoxide

INVESTIGATOR(S):
Dr. William Halperin
Mr. Richard Lemen

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date: October, 1979
End Date: August, 1981
Annual Funding:

PROJECT SUMMARY:

Carbon monoxide is a commonly encountered industrial asphyxiant, and the effects of acute exposure have been fairly well studied. Although little is known about the effects of chronic exposure in man, ambient air levels have been linked to the probability of surviving a myocardial infarction. In animals, chronic exposure is linked with lowering of the ventricular fibrillation threshold. NIOSH has conducted a study of possible chronic effects from CO exposure in motor vehicle inspectors with chronic exposure of 15 ppm with equivocal results. An opportunity may exist to study car tunnel workers with exposures of 70 ppm.

CAS Registry No.
Carbon monoxide 630-08-0

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

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Toxicology Research Projects Directory, Vol.04 iss.02 1979
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J Air Pollut Control Assoc; VOL 28, ISS 5, 1978, P482-97 (REF: 142)

CUMULATED INDEXES

Issues 1 to 43

This December 1979 issue carries the Index of Compounds and Index of Institutions and Investigators cumulated since Issue No. 1.

THESE INDEXES WILL NOT BE REPRINTED.

Commencing with the January 1980 issue of TOX-TIPS, the indexes will be cumulated on the schedule followed previously.

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  Rat - oral - 2-year...Food Cosmet. Toxicol. 12(5/6), 651 (1974)
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- Cancer Institute Bioassay Report available from NTIS, order number PB-275 666/AS (NCI #C00044).
- Aldrin
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(2), 187 (1962)
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- Alkylbenzesulfonate (linear)
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 18, 83 (1971)
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  - DNA synthesis bioassay - mutagenesis...37:33
  - Drosophila melanogaster - mutagenesis...37:33
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 516/AS (NCI #C04615).
  - Mouse - inhalation - mutagenesis...37:33
  - Mouse - inhalation - 18-week...19:3
  - Mouse - skin test - lifespan...10:15
  - Mouse - subcutaneous injection - lifespan...10:15
  - Rabbit - inhalation - 8-month...19:5
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 516/AS (NCI #C04615).
  - Rat - inhalation - mutagenesis...37:33
  - Rat - inhalation - 18-week...19:3
  - Rat - inhalation - 8-month...19:5
- Allylisothiocyanate
  - Mouse - gavage - 2-year...7:35
  - Rat - gavage - 2-year...7:35
- Alpha cellulose
  - Rat - ingestion - 2-year...11:7
  - Rat - ingestion - 3-generation...12:33
- Aluminum reduction industry
  - Human - workplace exposure - epidemiology...36:7
- Aluminum sulfate
  - Rat - inhalation - 6-week...11:19
- Aluminum sulfate, particulate
  - Guinea pig - inhalation - 60-day...9:17
  - Rat - inhalation - 60-day..9:17
- Amiben
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5, 349 (1964)
- Aminoanthraquinone
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 739/AS (NCI #C01876).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 739/AS (NCI #C01876).
- 4-Aminobiphenyl, see Benzidine
- Amino-4-ethoxyacetanilide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 194/AS (NCI #C01887).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 194/AS (NCI #C01887).
- Amino-2-methylanthraquinone
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 852/AS (NCI #C01901).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 852/AS (NCI #C01901).
- Amino-2-nitrophenol
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 189/AS (NCI #C03963).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 189/AS (NCI #C03963).
- Amino-5-nitrothiazole
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 346/AS (NCI #C03065).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 346/AS (NCI #C03065)
- 2-Aminotoluene
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
- 1-Aminoundecanoic acid
  - Mouse - diet - 2-year...5:31
  - Rat - diet - 2-year...5:31
- Ammonia
  - Rat - inhalation - 1-year...12:9
- Ammonium hydroxide, 10%
  - Rabbit - instilled in eye...2:18
- Ammonium sulfamate
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7, 497 (1965)

- Ammonium sulfate
  - Donkey - inhalation - 6-month...16:31
- Amorphous silica
  - Guinea pig - inhalation - 15-month...15:41
  - Monkey - inhalation - 15-month...15:41
  - Rat - inhalation - lifetime...15:41
- Amosite asbestos
  - Rat - intrapleural inoculation - lifespan...12:15
  - Rat - intratracheal inoculation - lifespan...12:15
- Anagestone acetate
  - Dog - intravenous - lifespan...18:3
  - Monkey - intravenous - lifespan...18:3
- Anagestone acetate and mestranol
  - Monkey - oral - long term...39:23
- Anilazine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 141/AS (NCI #C08684).
  - Mouse - feed - 2-year...21:35
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 141/AS (NCI #C08684).
  - Rat - feed - 2-year...21:35
- Aniline
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
- Aniline hydrochloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 539/AS (NCI #C03736).
  - Rat - diet - 2-year...13:7
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 539/AS (NCI #C03736).
- o-Anisidine hydrochloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 879/AS (NCI #C03747).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 879/AS (NCI #C03747).
- p-Anisidine hydrochloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 951/AS (NCI #C03758).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 951/AS (NCI #C03758).
- Anthranilic acid
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 883/AS (NCI #C01730).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 883/AS (NCI #C01730).
- Antimony arsenate, in Mg-deficient diet
  - Rat - intratracheal injection - 6-month...28:3
- Antimony chloride
  - Rat - oral - 2-year...Chemicals in Foods: A Report to Food and Drug Officials on Current Developments, Part II. Pesticides 16 (2), 47 (1952)
- Antimony ore concentrates
  - Rat - inhalation - carcinogenicity...41:5
- Antimony trioxide
  - Rat - inhalation - carcinogenicity...41:5
- ANTU
  - Rat - oral - 2-year...Proc. Soc. Exp. Biol. Med. 64(3), 305 (1947)
- Aramite
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(1), 70 (1962)
- Arochlor 1254 (Polychlorinated biphenyl mixture)
  - Rat - feed - carcinogenesis...National Cancer Irstitute Bioassay Report available from NTIS, order number PB-279 624/AS (NCI #C02664).
- Aroclor 1248
  - Monkey - diet - 18-month...33:13
  - Monkey - diet - 2-year...34:3
- Arsanilic acid
  - Rat - oral - 2-year...World's Poul. Congr., Proc., 12th, 1962
- Arsenic
  - Daphnia - aquarium water - 28-day...17:23
  - Oyster - aquarium water - 28-day...17:25
  - Shrimp - aquarium water - 28-day...17:25
  - Snail - aquarium water - 28-day...17:23
  - Stonefly - aquarium water - 28-day...17:23
- Arsenic acid
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(4), 526 (1963)
- Asbestos
  - Hamster - feed - lifespan...18:23, 18:29
  - Hamster - gavage - lifespan...18:25
  - Human - gold miners workplace exposure - epidemiology...35:31
  - Monkey - inhalation - 18-month...28:11
  - Mouse - intratracheal instillation - 5-week...22:3, 22:5
  - Mouse - intravenous - lifespan...18:5
  - Rat - feed - lifespan...18:19, 18:27
  - Rat - gavage - lifespan...18:21
  - Rat - injection - 1-year...22:3
  - Rat - intravenous - lifespan...18:5
  - Rat - inhalation - 18-month...28:11
- Asbestos (brakelinings)
  - Human - workplace exposure - epidemiology...36:15
- Asbestos (floor tile ingredient)
  - Human - epidemiology...1:13

Asbestos, see also Amosite asbestos
Ascorbic acid
  Mouse - diet - 2-year...29:13
1-Ascorbyl palmitate
  Rat - oral - 2-year...Proc. Soc. Exp.
    Biol. Med. 61, 195 (1946)
Aspartame
  Rat - diet...8:5
  Rat - diet - behavioral teratology...39:29
  Rat - diet - neurobehavioral effects...39:29
L-Aspartic acid, N-(phosphonoacetyl)-,
    tetrasodium salt
  Dog - intravenous - 1-year...16:17
  Monkey - intravenous - 1-year...16:17
  Mouse - oral - 30-day...16:17
Aspirin, phenacetin, and caffeine
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-284 684/AS
    (NCI #C02697).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-284 684/AS
    (NCI #C02697).
Aspon
  E. coli - mutagenesis...22:15
  Human lung culture - mutagenesis...22:15
  Saccharomyces cerevisiae - mutagenesis...22:15
  Salmonella typhimurium - mutagenesis...22:15
AT-125
  Dog - intravenous - 55-day...29:7
  Dog - intravenous - 78-day...29:7
  Dog - intravenous - 81-day...29:7
Atropine
  Rat - slow release tablet - gestation...24:23
Attapulgite clay
  Human - workplace exposure - epidemiology...40:27
Automobile exhaust
  Cat - inhalation - 90-day...9:13
  Guinea pig - inhalation - 90-day...9:13
  Mouse - inhalation - 3-month...13:17
  Rat - inhalation - 90-day...9:13
Automobile exhaust, catalyst-treated
  Guinea pig - inhalation...12-week...11:17
  Mouse - inhalation - 6-month...11:13
  Rat - inhalation - 13-week...10:25
Automobile exhaust, non-catalyst-treated
  Rat - inhalation - 13-week...10:25
Azacytidine 5
  Mouse - intraperitoneal - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-279 526/AS
    (NCI #C01569).
  Rat - intraperitoneal - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-279 526/AS
    (NCI #C01569).
Azinphosmethyl
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-286 371/AS
    (NCI #C00066).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-286 371/AS
    (NCI #C00066).
Azobenzene
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-293 835/AS
    (NCI #C02926).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-293 835/AS
    (NCI #C02926).
AZQ
  Dog - intravenous - 55-day...29:9
  Dog - intravenous - 78-day...29:9
  Dog - intravenous - 81-day...29:9
Barium chloride
  Rat - oral - 2-year...In Chemicals in Foods:
    A Report to the Association of Food and
    Drug Officials on Current Developments,
    Part II. Pesticides 16(2), 47 (1952)
Baygon
  Rat - pest control strip - 30-day...22:29
BCNU
  Dog - intravenous - 55-day...11:11
  Dog - intravenous - 78-day...11:11
  Dog - intravenous - 81-day...11:11
BCPE
  Mouse - gavage - 2-year...29:17
Benzanthracene
  Mouse - skin painting - 20-week...27:41
Benzene
  Human - inhalation - epidemiology...32:3
  Human - skin...42:21
  Monkey - skin...42:21
  Mouse - gavage - gestation...20:31
  Mouse - intramuscular injection -
    3-month...28:41
  Mouse - topical - 3-month...28:41
  Rat - inhalation - cytogenetic effects...39:19
  Rat - inhalation - gestation...20:7, 23:23
Benzene, with phenolbarbital pre-treatment
  Rat - inhalation - cytogenetic effects...39:19
Benzene hexachloride, technical mixture; and
  the alpha, beta, and gamma isomers
  Rat - oral - 2-year...In Chemicals in Foods:
    A Report to the Association of Food and
    Drug Officials on Current Developments,
    Part II. Pesticides 16(2), 47 (1952)
Benzidine
  Mouse - drinking water - 18-Month...18:7
  Mouse - drinking water - lifespan...18:15
  Mouse - injection - 60-day...9:39
  Mouse - injection - 40-week...9:39
  Mouse - injection - 560-day...9:39
  Wasp - diet - mutagenesis...34:25
Benzidine dihydrochloride

Mouse - drinking water - lifespan...18:9
Benzo (a) pyrene
Human - skin...42:27
Flounder - aquarium water - unspecified...17:27
Hamster - intratracheal instillation - 16-week...15:25
Monkey - skin...42:27
Mouse - intraperitoneal injection - 1-year...15:31
Mouse - skin painting - 15-month...26:17
Benzo (e) pyrene, and 12-o-tetradecanoylphorbol 13-acetate
Mouse - skin - 50-week...32:11
Benzo (g) pyrene
Mouse - oral - gestation...18:33
Benzoic acid
Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org. 228 (1962)
2H-1-Benzopyron-2-one, see Coumarin
1H-Benzotriazole
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 202/AS (NCI #C03521).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 202/AS (NCI #C03521).
Benzoyl peroxide
Drosophila melanogaster - mutagenesis...26:39
Benzthiazuron
Mouse - diet - 6-month...30:11
Benzthiazuron (with nitrite)
Mouse - diet - 6-month...30:11
Benzyl chloride
Human - workplace exposure...36:33
Mouse - intraperitoneal - 2-year...31:29
Rat - intraperitoneal - 2-year...31:29
Beryllium
Mouse - intraperitoneal injection - lifetime...12:37
BHA, see Butylated hydroxyanisole
BHC, see Benzene hexachloride
BHT, see Butylated hydroxytoluene
Biphenyl
Rat - gavage - teratology...11:31
2-Biphenylamine
Mouse - diet - 2-year...29:15
Rat - diet - 2-year...29:15
3(2-Biphenylyloxy)-1,2-epoxypropane
Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Bis(2-chloroethyl) ether
Mouse - gavage - 2-year...33:21
Rat - intubation - 60-day...10:35
Salmonella typhimurium - mutagenesis...10:35
Bis(2-chloroisopropyl) ether
Rat - intubation - 60-day...10:35
Salmonella typhimurium - mutagenesis...10:35
Bis(chloromethyl)ether
Rat - inhalation...1:5
Bis(2-Chloro-1-Methylethyl) Ether
Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 741/AS (NCI #C50044A).
Bis(p-chlorophenoxy)methane
Rat - oral - 2-year...J. Agr. Food Chem. 11 (6), 468 (1963)
Bis-(1,1-hydroperoxy-1,1-methyl)diethyl peroxide, with 2,2-dihydroperoxy propane
Rat - oral - 2-year...Food Cosmet. Toxicol. 5, 309 (1967)
Bis(2-methoxyethoxyethyl) ether
DNA synthesis bioassay - mutagenesis...37:27
Drosophila melanogaster - mutagenesis...37:27
Mouse - inhalation - mutagenesis...37:27
Rat - inhalation - mutagenesis...37:27
Bismuth citrate
Rat - intravenous - 6-month...13:11
Bismuth phosphate
Rat - intravenous - 6-month...13:11
Bismuth subnitrate
Rat - intravenous - 6-month...13:11
Bisphenol A
Mouse - diet - 2-year...5:27
Rat - diet - 2-year...5:27
Biurea
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7(3), 445 (1965)
Black PN
Rat - oral - 2-year...Food Cosmet. Toxicol. 10,17 (1972)
Borax
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 23 (3), 351 (1972)
Boric acid
Rat - oral - 2-year...Toxicol. Appl Pharmacol. 23(3), 351 (1972).
Boron
Rat - ingestion - 3-generation...17:35
BPPD
Mouse - ingestion - 1 1/2-year...14:13
Bromacil
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 34 (2), 189 (1975)
Brominated benzene compounds
Rat - 120-day...9:19
Brominated vegetable oil
Rat - diet - behavioral toxicology...39:39
Rat - diet - neurobiological effects...39:39
Bromoethylene
Mouse - skin application...3:5
Mouse - subcutaneous injection...3:5
Rat - intragastric intubation...3:5
2-Bromo-2-nitro-1,3-propanediol
Rat - inhalation - 18-months...26:25
1,3-Butadiene
Mouse - inhalation - 2-year...7:5
Rat - inhalation - 90-day...23:3

  - Rat - inhalation - 2-year...7:5
- Butoxy polyethylenepolypropylene glycol, see Ucon HB 260
- Butoxypolypropylene glycol (mol. wt. 800)
  - Rat - oral 2-year...J.Agr. Food Chem. 11(6), 468 (1963)
- n-Butyl acrylate
  - Rat - inhalation - 2-year...32:5
- Butyl rubber
  - Rat - inhalation...43:9
- Butylated hydroxyanisole
  - Drosophila melanogaster - feed - mutagenesis...27:21
  - Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobiols and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org. 228 (1962)
  - Rat - diet - neurobehavioral effects...39:31
  - Rat - diet - behavioral teratology...39:31
- Butylated hydroxytoluene
  - Drosophila melanogaster - feed - mutagenesis...27:23
  - Mouse - feed - 8-week...27:31
  - Rat - diet - behavioral teratology...39:33
  - Rat - diet...8:5
  - Rat - diet - neurobiological effects...39:33
  - Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Ninth Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Some Antimicrobials, Antioxidants, Emulsifiers, Stabilizers, Flour-Treatment Agents, Acids and Bases. Tech. Rep. Ser. Wld. Hlth. Org. 339 (1966)
  - Wasp - diet - mutagenesis...32:39
- Butylbenzylphthalate
  - Mouse - diet - 2-year...6:35
  - Rat - diet - 2-year...6:35
- Butyl-3,4-dihydro-2,2-dimethyl-4-oxo-1-2H-pyran-6-carboxylate, see Indalone
- 1,3-Butylene glycol
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5, 358 (1964)
- Butylene glycol adipic acid polyester, see Santicizer 334F
- Butylene oxide
  - DNA synthesis bioassay - mutagenesis...37:11
  - Drosophila melanogaster - mutagenesis...37:11
  - Mouse - inhalation - mutagenesis...37:11
  - Rabbit - inhalation - teratogenesis...37:7
  - Rat - inhalation - mutagenesis...37:11
  - Rat - inhalation - teratogenesis...37:5
- tert-Butylhydroquinone
  - Rat - diet - behavioral toxicology...39:41
  - Rat - diet - neurobiological effects...39:41
- 2-(para-tert-Buytlphenoxy) isopropyl 2'-chloroethyl sulfite, see Aramite
- 4-tert-Butylphenyl salicylate
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
- Butyl stearate
  - Rat - oral - 2-year...AMA Arch. Ind. Hyg. Occup. Med. 7, 310 (1953)
- Cacodylic acid
  - Rat - inhalation - 90-day...19:33
- Cadmium
  - Monkey - drinking water - 1-year...22:31
  - Mouse - drinking water - 12-month...11:21
  - Oyster - aquarium water - 1-month...17:25
  - Rabbit - drinking water - 4-month...11:23
  - Rat - subcutaneous - gestation...31:11
  - Shrimp - aquarium water - 1-month...17:25
- Cadmium acetate
  - Mouse - ingestion - 18-month...14-19
  - Rat - drinking water - 150-day...13:19
  - Rat - ingestion - 18-month...14-19
- Cadmium and zinc
  - Rat - feed - 15-month...9:41
- Cadmium arsenate, in Mg-deficient diet
  - Rat - intratracheal injection - 6-month...28:3
- Cadmium chloride
  - Rat - diet - 45-day...15:21
  - Rat - drinking water - 160-day...12:25
  - Rat - drinking water - 5-month...17:13
  - Rat - oral - 2-year...Chemicals in Foods: A Report to the Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)
- Calcium carageenan
  - Rat - diet...8:5
  - Rat - diet - several generations...8:7, 8:11, 8:13
- Calcium cyanamide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 625/AS (NCI #C02937).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 625/AS (NCI #C02937).
- Calcium disodium ethylenediaminetetraacetate
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(2), 142 (1963)
- Calcium disodium versenate
  - Rat - intravenous - 12-week...15:19
- Calcium fluoride
  - Guinea pig - inhalation ⊥ 4-month...10:41
- Calcium sulfate, particulate
  - Guinea pig - inhalation - 60-day...9:17
  - Rat - inhalation - 60-day...9:17
- Caprolactam
  - Mouse - diet - 2-year...5:25
  - Rat - diet - 2-year...5:25
- Captan
  - Chinese hamster lung cells - mutagenesis...21:31
  - Cultured mouse cells - mutagenesis...21:31

Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 475/AS (NCI #C00077).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 475/AS (NCI #C00077).
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Carbarsone
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 9, 528 (1966)

Carbaryl
Mouse - diet - 6-month...30:13

Carbaryl (with nitrite)
Mouse - diet - 6-month...30:13

Carbazole, 3-amino-9-ethyl-, hydrochlor
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 126/AS (NCI #C03043).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 126/AS (NCI #C03043).

Carbofuran
E. coli - mutagenesis...22:17
Human lung culture - mutagenesis...22:17
Saccharomyces cerevisiae - mutagenesis...22:17
Salmonella typhimurium - mutagenesis...22:17

Carbon
Mouse - inhalation - 6-month...13:15

Carbon disulfide
Human - workplace exposure - epidemiology ...35:37
Rabbit - inhalation - teratology...19:13
Rat - inhalation - teratology...19:13

Carbon monoxide
Human - inhalation - epidemiology...43:25

Carbon monoxide, and high/low salt diets
Rat...39:17

Carboxymethylcellulose
Rat - oral - 2-year...Food Res. 13, 29 (1948)

Carbromal
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 130/AS (NCI #C03805).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 130/AS (NCI #C03805).

Carmoisine
Mouse - diet...4:4
Rat - diet...4:4
Rat - oral - 2-year...Food Cosmet. Toxicol. 12(5/6), 601 (1974).

Carob gum
Mouse - diet - 2-year...6:27
Rat - diet - 2-year...6:27

beta-Carotene
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 2(2), 225 (1960)

Catechol
Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)

Chloramben
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 065/AS (NCI #C00055).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 065/AS (NCI #C00055).

Chlorbenside
Rat - oral - 2-year...Summaries of Pesticide Toxicity. The Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Chlorbenside, sulphone derivative
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Chlorbenzilate
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 123/AS (NCI #C00408).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 123/AS (NCI #C00408).

Chlordan
Rat - oral - 2-year...In Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)

Chlordane
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-271 977/AS (NCI #C00099).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-271 977/AS (NCI #C00099).

Chlordecone
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 041/AS (NCI #C00191).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 041/AS (NCI #C00191).

- Chlordiazepoxide (with sodium nitrite)
  - Rat - diet - 2-year...30:23
- Chlorinated benzene compounds
  - Rat - 120-day...9:19
- Chlorinated hydrocarbons
  - Human - workplace exposure...36:33
- Chlorinated organic compounds
  - Daphnia - aquatic environment...45-day...12:41
- Chlorinated paraffin C10-12 (60% Cl)
  - Common mussel - 1-yr. maximum - 38:25
  - Mysid shrimp - 1-yr. maximum - 38:25
  - Rainbow trout - 1-yr. maximum - 38:25
- Chlorinated paraffin C10-12 (60%Cl)
  - Rabbit - teratogenesis...38:21
  - Rat - diet - reproduction study...38:29
- Chlorinated paraffin C10-12 (60% Cl)
  - Rat - teratogenesis...38:19
- Chlorinated paraffin C10-12 (60% Cl)
  - Rat bone marrow - mutagenesis...38:17
- Chlorinated paraffin C10-12 (60% Cl)
  - Rat - dominant lethal - mutagenesis...38:15
- Chlorinated paraffin C10-12 (60% Cl)
  - Cell transformation - mutagenesis...38:13
- Chlorinated paraffin C10-12 (60% Cl)
  - Rat - diet - 13-week..38:11
- Chlorinated paraffin C10-12 (60% Cl)
  - Rat - diet - 13-week...38:11
- Chlorinated paraffin C10-12 (60% Cl)
  - Rat - intubation - 14-day...38:9
- Chlorinated paraffin C10-12 (60% Cl)
  - Rat - diet - 14-day...38:7
- Chlorinated paraffin C10-12 (60% Cl)
  - Rat - gavage - acute...38:5
- Chlorinated paraffin C14-16 (52% Cl)
  - Rabbit - teratogenesis...38:21
- Chlorinated paraffin C14-16 (52% Cl)
  - Rat - teratogenesis...38:19
- Chlorinated paraffin C14-16 (52% Cl)
  - Rat bone marrow - mutagenesis...38:17
- Chlorinated paraffin C14-16 (52% Cl)
  - Rat - diet - 13-week...38:11
- Chlorinated paraffin C14-16 (52% Cl)
  - Common mussel - 1-yr. maximum - 38:25
  - Mysid shrimp - 1-yr. maximum - 38:25
  - Rainbow trout - 1-yr. maximum - 38:25
- Chlorinated paraffin C14-16 (52% Cl)
  - Rat - intubation - 14-day...38:9
- Chlorinated paraffin C14-16 (52% Cl)
  - Rat - diet - 14-day...38:7
- Chlorinated paraffin C14-16 (52% Cl)
  - Rat - gavage - acute...38:5
- Chlorinated paraffin C22-26 (40% Cl)
  - Common mussel - 1-yr. maximum - 38:25
  - Mysid shrimp - 1-yr. maximum - 38:25
  - Rainbow trout - 1-yr. maximum - 38:25
- Chlorinated paraffin C22-26 (40% Cl)
  - Rabbit - teratogenesis...38:21
- Chlorinated paraffin C22-26 (40% Cl)
  - Rat - teratogenesis...38:19
- Chlorinated paraffin C22-26 (40% Cl)
  - Rat bone marrow - mutagenesis...38:17
- Chlorinated paraffin C22-26 (40% Cl)
  - Rat - diet - 13-week...38:11
- Chlorinated paraffin C22-26 (40% Cl)
  - Rat - intubation - 14-day...38:9
- Chlorinated paraffin C22-26 (40% Cl)
  - Rat - diet - 14-day...38:7
- Chlorinated paraffin C22-26 (40% Cl)
  - Rat - gavage - acute...38:5
- Chlorinated paraffin C22-26 (70% Cl)
  - Common mussel - 1-yr. maximum - 38:25
  - Mysid shrimp - 1-yr. maximum - 38:25
  - Rainbow trout - 1-yr. maximum - 38:25
- Chlorinated paraffin C22-26 (70% Cl)
  - Rabbit - teratogenesis...38:21
- Chlorinated paraffin C22-26 (70% Cl)
  - Rat - teratogenesis...38:19
- Chlorinated paraffin C22-26 (70% Cl)
  - Rat bone marrow - mutagenesis...38:17
- Chlorinated paraffin C22-26 (70% Cl)
  - Cell transformation - mutagenesis...38:13
- Chlorinated paraffin C22-26 (70% Cl)
  - Rat - diet - 13-week...38:11
- Chlorinated paraffin C22-26 (70% Cl)
  - Rat - intubation - 14-day...38:9
- Chlorinated paraffin C22-26 (70% Cl)
  - Rat - diet - 14-day...38:7
- Chlorinated paraffin C22-26 (70% Cl)
  - Rat - gavage - acute...38:5
- Chlorine (free in water)
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 6, 147 (1968)
- Chloroacetaldehyde
  - Mouse - skin...2:4
  - Mouse - subcutaneous injection...2:4
  - Mouse - intragastric feeding...2:4
- Chloroacetyl acetanilide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 754/AS (NCI #C03770).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 754/AS (NCI #C03770).
- p-Chloroaniline
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 896/AS (NCI #C02039A).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 896/AS (NCI #C02039A).
- p-Chlorobenzyl p-chlorophenyl sulfide, see Chlorbenside
- 2-Chloro-1,3-butadiene
  - Rat - inhalation...3:4

2-Chloroethanol
  Mouse - gavage - 2-year...5:23
  Rat - gavage - 2-year...5:23
1-(2-Chloroethyl)3-(2,6-dioxo-3-piperidyl)-1-nitrosourea, see PCNU
Chloroethynyl norgestrel and mestranol
  Monkey - oral - long term...39:23
(2-Chloroethyl)trimethylammonium chloride
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 627/AS (NCI #C02960).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 627/AS (NCI #C02960).
2-(Chloromethyl)pyridine hydrochloride
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 895/AS (NCI #C03907).
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 895/AS (NCI #C03907).
Chloroform
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 018/AS (NCI #C02686).
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 018/AS (NCI #C02686).
p-Chlorophenyl p-chlorobenzene sulfonate
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
p-Chlorophenyl phenyl sulfone, see Sulphenone
beta-Chloroprene
  Rat - inhalation...3:4
  Hamsters - inhalation - 2-year...13:31
alpha-Chloropropylaldehyde
  Mouse - intragastric feeding...2:11
  Mouse - skin...2:11
  Mouse - subcutaneous injection...2:11
Chloropropamide
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS order number PB-275 178/AS (NCI #C01752).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS order number PB-275 178/AS (NCI #C01752).
1-Chloropropene, cis and trans
  Mouse - intragastric feeding...2:14
  Mouse - skin...2:14
  Mouse - subcutaneous injection...2:14
1-Chloropropyl epoxide, cis and trans
  Mouse - skin...2:13
5-Chlorosalicylic acid
  Daphnia - aquatic environment - 45-day...12:41
Chlorothalonil
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 369/AS (NCI #C00102).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 369/AS (NCI #C00102).
4-Chloro-o-toluidine hydrochloride
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 864/AS (NCI #C03316).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 864/AS (NCI #C03316).
Chlorpicrin
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 311/AS (NCI #C00533).
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 311/AS (NCI #C00533).
Chlorpropamide
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 2(2), 195 (1960)
Chlorpyrifos
  Dog - oral - 2-year...Food Cosmet. Toxicol. 12(1), 45 (1974)
Chlortetracycline
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 3(6), 654 (1961)
Chocolate Brown FB
  Mouse - oral - 80-week...Food Cosmet. Toxicol. 11(3),375 (1973)
  Rat - oral - 2-year...Food Cosmet. Toxicol. 10(1), 3 (1972)
Chromic oxide pigment
  Rat - oral - 2-year...Food Cosmet. Toxicol. 13(3), 547 (1975)
Chromium compounds, see also Sodium dichromate
Chrysene and tumor promotor
  Mouse - skin - 50-week...32:13
C.I. Acid Orange No. 10
  Mouse - diet...4:5
  Rat - diet...4:5
C.I. Acid Red No. 14
  Mouse - diet...4:4
  Rat - diet...4:4
C.I. Disperse Yellow No. 3
  Mouse - diet...4:7
  Rat - diet...4:7
CIPC
  Rat - oral - 2-year...Toxicol. Appl.

Pharmacol. 2(6), 659 (1960)
Citrus Red No. 2 (C.I. 12156)
  Rat - oral - 2-year...Proc. Univ. Otago Med. Sch. 43, 31 (1965)
C.I. Vat Yellow 4
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 821/AS (NCI #C03565).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 821/AS (NCI #C03565).
Clay, attapulgite, see Attapulgite clay
Cliquinol
  Dog - capsule - 100-day...32:27
Clonitralid
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 124/AS (NCI #C00431).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 124/AS (NCI #C00431).
CMC, see carboxymethylcellulose
Coal-fired power plant emissions
  Rat - intratracheal - 3-week...19:19
Coal slag
  Rat - intratracheal injection - 9-month...28:7
Coal slag abrasive
  Guinea pig - inhalation - 18-month...26:29
  Monkey - inhalation - 18-month...26:29
  Rat - inhalation - 18-month...26:29
Coal tar pitch fumes
  Human - workplace exposure - epidemiology...38:35
Coal tar pitch volatiles
  Human - workplace exposure - epidemiology...36:7
Cobalt
  Mouse - intraperitoneal injection - lifetime...12:37
Coke, petroleum
  Mouse lymphoma cells - mutagenesis...42:9
  Rat bone marrow cells - mutagenesis...42:9
  Salmonella typhimurium - mutagenesis...42:9
Coke, petroleum
  Mouse lymphoma cells - mutagenesis...42:11
  Rat bone marrow cells - mutagenesis...42:11
  Salmonella typhimurium - mutagenesis...42:11
Coke, petroleum
  Mouse lymphoma cells - mutagenesis...42:13
  Rat bone marrow cells - mutagenesis...42:13
  Salmonella typhimurium - mutagenesis...42:13
Coke, petroleum
  Mouse lymphoma cells - mutagenesis...42:15
  Rat bone marrow cells - mutagenesis...42:15
  Salmonella typhimurium - mutagenesis...42:15
Coke oven workers
  Human - workplace exposure - epidemiology...38:29
Complex industrial effluents
  Minnow - aquarium water - 30-day...16:35
Compound 1080
  Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)
Copper
  Mouse - intraperitoneal injection - lifetime...12:37
  Oyster - aquarium water - 1-month...17:25
  Shrimp - aquarium water - 1-month...17:25
Copper chromate
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. The Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Copper slag
  Rat - intratracheal injection - 9-month...28:7
Co-Ral
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Cottonseed oil, deodorized and nondeodorized
  Mouse - gavage - 2-year...7:39
  Rat - gavage - 2-year...7:39
Coumaphos
  Mouse - diet - 2-year...22:13
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 305/AS (NCI #C08662).
  Rat - diet - 2-year...22:13
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 305/AS (NCI #C08662).
Coumarin
  Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)
Coumestrol
  Mouse - oral - reproduction...42:3
  Mouse - oral - teratology...42:3
m-Cresidine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 188/AS (NCI #C02993).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number, PB-286 188/AS (NCI #C02993).
p-Cresidine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 188/AS (NCI #C02982).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 188/AS (NCI #C02982).

- Crotoxyphos
  - E. coli - mutagenesis...23:33
  - Human lung fibroblast culture - mutagenesis...23:33
  - Saccharomyces cerevisiae - mutagenesis...23:33
  - Salmonella typhimurium - mutagenesis...23:31
- Crude oil, fractionated and subfractionated
  - Mice - dermal - 18-month...21:5
- Cube powder
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7(4), 535 (1965)
- Cupferron
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 409/AS (NCI #C03258).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 409/AS (NCI #C03258).
- Cupric chloride
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity, Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Cutting oils
  - Mouse - skin - 78-week...18:17
- Cyanogen
  - Rat - inhalation - 6-month...17:17
- Cyclohexanone
  - DNA synthesis bioassay - mutagenesis...37:17
  - Drosophila melanogaster - mutagenesis...37:17
  - Mouse - drinking water - 2-year...30:17
  - Mouse - inhalation - mutagenesis...37:17
  - Rat - drinking water - 2-year...30:17
  - Rat - inhalation - mutagenesis...37:17
- Cysteamine, with Adriamycin
  - Rat - intravenous injection...4:11
- 2,4-D
  - Dog - oral - 2-year...Toxicol. Appl. Pharmacol. 20, 122 (1971)
  - E. coli - mutagenesis...24:31
  - Human lung culture - mutagenesis...24:31
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 20, 122 (1971)
  - Saccharomyces cerevisiae - mutagenesis...24:31
  - Salmonella typhimurium - mutagenesis...24:31
- Dalapon
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Daminozide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 073/ASM (NCI #C03827).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 073/ASM (NCI #C03827).
- D & C Green No. 5
  - Mouse - diet - 2-year...29:39
  - Rat - diet - 30-month...29:41
- D & C Orange No. 5
  - Mouse - diet - 2-year...29:31
  - Rat - diet - 30-month...29:33
  - Rat - oral - 2-year...Industrial Bio-Test Laboratories, unpub. data.
- D & C Orange No. 10
  - Rat - oral - 2-year...Industrial Bio-Test Laboratories, unpub. data.
- D & C Orange No. 17
  - Mouse - diet - 2-year...29:35
  - Rat - diet - 30-month...29:37
- D & C Red No. 2
  - Rat - oral - 2-year...Toxicology 3 (1), 115 (1975)
- D & C Red No. 6
  - Mouse - diet - 24-month...28:13
  - Rat - diet - 30-month...28:15
- D & C Red No. 7
  - Mouse - diet - 24-month...28:13
  - Rat - diet - 30-month...28:15
- D & C Red No. 8
  - Mouse - diet - 24-month...28:17
  - Rat - diet - 30-month...28:19
- D & C Red No. 9
  - Mouse - diet - 24-month...28:17
  - Mouse - diet...4:6
  - Rat - diet... 4:6
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(2), 200 (1962)
- D & C Red No. 10
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(6), 728 (1963)
- D & C Red No. 19
  - Mouse - diet - 24-month...28:21
  - Rat - diet - 30-month...28:23
- D & C Red No. 21
  - Mouse - diet - 24-month...28:25
  - Rat - diet - 30-month...28:27
  - Rat - oral - 2-year...Industrial Bio-Test Laboratories, unpub. data.
- D & C Red No. 22
  - Mouse - diet - 24-month...28:25
  - Rat - diet - 30-month...28:27
- D & C Red No. 27
  - Mouse - diet - 24-month...28:29
  - Rat - oral - 2-year...Industrial Bio-Test Laboratories, unpub. data.
  - Rat - diet - 30-month...28:19, 29:21
- D & C Red No. 28
  - Mouse - diet - 24-month...28:29
  - Rat - diet - 30-month...29:21
- D & C Red No. 30
  - Mouse - diet - 2-year...29:23
  - Rat - diet - 30-month...29:25
- D & C Red No. 33
  - Mouse - diet - 2-year...30:39
  - Rat - diet - 30-month...30:41

D & C Red No. 36
Mouse - diet - 2-year...29:27
Rat - diet - 30-month...29:29
D & C Red No. 37
Mouse - diet - 24-month...28:21
Rat - diet - 30-month...28:23
Dapsone
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-274 394/AS (NCI #C01718).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-274 394/AS (NCI #C01718).
Daunorubicin
Pig - injection - 18-week...24:27
DBCP, see Dibromochloropropane
2,4-DB
E. coli - mutagenesis...25:35
Human lung culture - mutagenesis...25:35
Saccharomyces cerevisiae - mutagenesis...25:35
Salmonella typhimurium - mutagenesis...25:35
DCPD
Mouse - ingestion - 3-generation...16:19
Rat - ingestion - 10-day...16:19
Rat - ingestion - 3-generation..16:19
DDD
Rat - oral - 2-year...Summaries of Pesticide Toxicity. The Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
DDE-P,P'
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 367/AS (NCI #C00555).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 367/AS (NCI #C00555).
DDM
Mouse - diet - 2-year...6:21
Rat - diet - 2-year...6:21
DDT
Deer mouse - ingestion - 18-month...14:25
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 367/AS (NCI #C00464).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 367/AS (NCI #C00464).
Rat - oral - 2-year...Chemicals in Foods. A Report to the Food and Drug Officials on Current Developments, Part II. Pesticides 16 (2), 47 (1952)
DEF
Chicken - oral - 90-day...19:27
Dehydroacetic acid
Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Delnav
Rat - gavage - teratology...11:31
Demeton
E. coli - mutagenesis...25:37
Human lung culture - mutagenesis...25:37
Saccharomyces cerevisiae - mutagenesis...25:37
Salmonella typhimurium - mutagenesis...25:37
Denture cleansers
Rabbit - esophageal...2:16
Rabbit - eye...2:16
Rabbit - skin...2:16
Rat - esophageal...2:16
Rat - eye...2:16
Rat - skin...2:16
Diallate
E. coli - mutagenesis...24:33
Human lung culture - mutagenesis...24:33
Rat - diet - 3-generation...15:7
Saccharomyces cerevisiae - mutagenesis...24:33
Salmonella typhimurium - mutagenesis...24:33
Diallyl phthalate
Mouse - gavage - 2-year...5:21
Rat - gavage - 2-year...5:21
2,4-Diaminoanisole
Rat - injection - 10-week...8:17
2,5-Diaminoanisole
Rat - injection - 10-week...8:17
2,4-Diaminoanisole sulfate
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 940/AS (NCI #C01989).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 940/AS (NCI #C01989).
Wasp - diet - mutagenesis...33:37
3,4-Diaminobenzoic acid
Bacteria - mutagenesis...26:5
Cultured mouse cells - mutagenesis...26:5
3,5-Diaminobenzoic acid
Bacteria - mutagenesis...26:5
Cultured mouse cells - mutagenesis...26:5
1,4-Diamino-2,6-dichlorobenzene
Mouse - diet - 2-year...5:33
Rat - diet - 2-year...5:33
4,4'-Diaminodiphenylmethane
Mouse - diet - 2-year...6:21
Rat - diet - 2-year...6:21
2,4-Diaminotoluene
Bacteria - mutagenesis...26:5
Cultured mouse cells - mutagenesis...26:5
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 593/AS (NCI #C02302).

- Mouse - gavage - teratogenesis...33:7
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 593/AS (NCI #C02302).

2,5-Diaminotoluene sulfate
- Mouse - gavage - teratogenesis...34:5

Diarylanilide yellow
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 272/AS (NCI #C03269).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 272/AS (NCI #C03269).

Diazepam
- Rat - feed - gestation...21:19

Diazinon
- E. coli - mutagenesis...22:23
- Human lung culture - mutagenesis...22:23
- Mouse - feed - 2-year...21:39
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 889/AS (NCI #C08673).
- Rat - feed - 2-year...21:39
- Rat - oral - 2-year...Summaries of Pesticide Data. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Rat - pest control strip - 60-day...22:25
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 889/AS (NCI #C08673).
- Saccharomyces cerevisiae - mutagenesis...22:23
- Salmonella typhimurium - mutagenesis...22:23

Dibenz (a,c) anthracene
- Mouse - skin - 50-week...33:3

Dibenz (a,h) anthracene, and 12-o-tetradecanoylphortate 13-acetate
- Mouse - skin - 50-week...32:15

Dibenzo-p-dioxin
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 475/AS (NCI #C03656).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 475/AS (NCI #C03656).

Dibenzofuran
- Rat - ingestion - 2-year...10:31

Dibromochloropropane (DBCP)
- Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 472/AS (NCI #C00500).
- Mouse - gavage - 18-month...33:23
- Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 472/AS (NCI #C00500).
- Rat - gavage - 18-month...33:25

1,2-Dibromo-3-chloropropane
- Mouse - skin test - lifespan...10:13

1,2-Dibromoethane
- Mouse - gavage - 1-year...33:27
- Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 428/AS (NCI #C00522).
- Mouse - skin test - lifespan...10:3
- Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 428/AS (NCI #C00522).
- Rat - gavage - 1-year...33:29
- Rat - inhalation - 18-month...14:11, 16:23

2,3-Dibromopropyl phosphate
- Rat - gavage - 13-week...16:29

Tris(2,3-Dibromopropyl)phosphate
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 271/AS (NCI #C03270).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 271/AS (NCI #C03270).

2,6-Di-tert-butyl-4-hydroxymethylphenol see Ionox 100

Dibutyl sebacate
- Rat - oral - 2-year...AMA Arch. Ind. Hyg. Occup. Med. 7, 310 (1953)

Dibutyltin diacetate
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 567/AS (NCI #C02028).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 567/AS (NCI #C02028).

Dicamba
- E. coli - mutagenesis...22:21, 24:35
- Human lung culture - mutagenesis...22:21, 24:35
- Saccharomyces cerevisiae - mutagenesis...22:21, 24:33
- Salmonella typhimurium - mutagenesis...22:21, 24:35

Dichlone
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Dichlorbenil
- Rat - oral - 2-year...Food Cosmet. Toxicol. 6, 261 (1968)

2,5-Dichloro-3-aminobenzoic acid, see Amiben

ortho-Dichlorobenzene
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
ortho-Dichlorobenzene, with isobutane
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
ortho-Dichlorobenzene, with propellant 11
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
2,6-Dichlorobenzonitrile, see Dichlorberil
4,4'-Dichlorobiphenyl
  Mouse - gavage - gestation...31:13
1,4-Dichlorobutene
  Dog - inhalation - 90-day...13:29
  Rat - inhalation - 90-day...13:29
  Rat - inhalation - 2-year...13:29
  Rat - inhalation - teratology...13:29
2,4-Dichloro-6-o-chloroanilino-s-triazine, see Dyrene
2,7-Dichlorodibenzo-p-dioxin (DCDD)
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 570/AS (NCI #C03667B).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 570/AS (NCI #C03667B).
1,1-Dichloroethane
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 345/AS (NCI #C04535).
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 345/AS (NCI #C04535).
1,2-Dichloroethane
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 968/AS (NCI #C00511).
  Mouse - skin test - lifespan...10:7
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 968/AS (NCI #C00511).
1,1-Dichloroethylene
  Dog - ingestion - 90-day...5:9
  Mouse - gavage - 2-year...6:9
  Rat - gavage - 2-year...6:9
  Rat - ingestion - 90-day...5:9
  Rat - ingestion - long-term...5:9
  Rat - inhalation - 90-day...5:9
  Rat - inhalation - long-term...5:9
cis-1,2-Dichloroethylene
  Mouse - gavage - 2-year...6:15
  Rat - gavage - 2-year...6:15
trans-1,2-Dichloroethylene
  Mouse - gavage - 2-year...6:17
  Rat - gavage - 2-year...6:17
Dichloromethane, see Methylene chloride
2,4-Dichlorophenoxyacetic acid, see 2,4-D
2,4-Dichlorophenoxyethyl sulfate, sodium salt
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea, see Linuron
1,3-Dichloropropene
  Mouse - skin test - lifespan...10:17
  Mouse - subcutaneous injection - lifespan...10:17
alpha, alpha-Dichloropropionic acid (sodium salt), see Dalapon
4,4-Dichloro-alpha-trichloro-methyl-benzhydrol, see Kelthane
Dichlorovos
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-270 937/AS (NCI #C00113).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-270 937/AS (NCI #C00113).
Dicofol
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 206/AS (NCI #C00486).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 206/AS (NCI #C00486).
Dicyandiamide
  Rat - oral - 2-year...American Cyanamid Co., unpub. data.
N,N'-Dicyclohexylthiourea
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 539/AS (NCI #C04524).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 539/AS (NCI #C04524).
Dicyclopentadiene
  Mouse - ingestion - 3-generation...16:19
  Rat - ingestion - 10-day...16:19
  Rat - ingestion - 3-generation..16:19
Dieldrin
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-275 666/AS (NCI #C00124).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-275 666/AS (NCI #C00124).

Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(2), 187 (1962)
Diepoxybutone
  Wasp - diet - mutagenesis...32:31
Diesel exhaust emissions
  Cat - inhalation - 1-year...16:33
  Rat - inhalation - 1-year...16:33
Diesel fuel
  Mouse lymphoma cells - mutagenesis...21:13
  Rat - inhalation - teratogenesis...35:19
  Rat bone marrow cells - mutagenesis...21:13
  Salmonella typhimurium - mutagenesis...21:13
  Yeast - mutagenesis...21:13
Diethanolinitrosamine
  Mouse - skin - 78-week...18:17
Diethyl carbonate (3000 ppm in drinking water)
  Rat - oral - 2-year...Food Cosmet. Toxicol. 6, 449 (1968)
O,O-Diethyl O-(3-chloro-4-methyl-1-oxo-2H- benzopyran-7-yl) phosphorothioate, see Co-Ral
Diethyl-1-(2,4-dichlorophenyl)-2-chlorovinyl phosphate
  Dog - oral - 2-year...Toxicol. Appl. Pharmacol. 17, 323 (1970)
Di(2-ethylhexyl)adipate
  Mouse - diet - 2-year...6:33
  Rat - diet - 2-year...6:33
Di(2-ethylhexyl)phthalate
  Mouse - diet - 2-year...6:31
  Rat - diet - 2-year...6:31
  Rat - oral - 2-year...J. Agr. Food. Chem. 11 (6), 468 (1963)
Diethylnitrosamine
  Wasp - diet - mutagenesis...31:41
Diethylstilbestrol
  Mouse - feed - 3-generation...18:13
  Mouse - oral - gestation...18:35
  Mouse - oral - 18-month...16:43
  Mouse - subcutaneous injection - 18-month...16:43
Diethylthiourea, N,N'-
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 626/AS (NCI #C03816).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 626/AS (NCI #C03816).
Di-n-hexyl azelate
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(2), 247 (1962)
2,2-Dihydroperoxy propane, with bis-(1,1-hydro-peroxy-1,1-methyl) diethyl peroxide in flour.
  Rat - oral - 2-year...Food Cosmet. Toxicol. 5, 309 (1967)
Dihydrosafrole
  Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)
Diisobutyl adipate
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Diisobutyl phenoxy ethoxy ethyl dimethyl benzyl ammonium chloride, see Hyamine 1622
Diisopropyl methylphosphonate
  Rat - diet - 3-month...15:33
  Rat - diet - 3-generation...15:35
Dilauryl thiodipropionic acid
  Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)
Dimethoate
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 367/AS (NCI #C00135).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 367/AS (NCI #C00135).
Dimethoxyaniline, hydrochloride 2,4-
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 625/AS (NCI #C02255).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 625/AS (NCI #C02255).
3,3'-Dimethoxybenzidine
  Mouse - drinking water - 2-year...31:35
3,3'-Dimethoxybenzidine-4,4'-diisocyanate
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 154/AS (NCI #C02175).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 154/AS (NCI #C02175).
Dimethylamine
  Rat - inhalation - 2-year...30:3
Dimethylbenzanthracene
  Mouse - oral - gestation...18:31
7,12-Dimethylbenzanthracene
  Mouse - skin - 50-week...33:5
3,3'-Dimethylbenzidine
  Mouse - drinking water - 2-year...31:37
Dimethyl carbate
  Rat - oral - 2-year...Insect Repellents. Vol 19, p. 87, Association of Food and Drug Officials of the U.S., Topeka, Kan. (1955)
Dimethylhydrazine
  Hamster - feed - lifespan...18:29
  Rat - feed - lifespan...18:27

- 1,1-Dimethylhydrazine
  - Hamster - inhalation - 6-month...11:27
  - Mouse - inhalation - 6-month...11:27
  - Rat - inhalation - 6-month...11:27
- 2,4-Dimethyl-2-methylene-1,2,4-thiadiozolidine-5-thione
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
- 2,4-Dimethylphenol
  - Minnow - aquarium water - 28-day...31:7
- Dimethyl phthalate
  - Rat - oral - 2-year...Insect Repellents 19, 87. Association of Food and Drug Officials of the U.S. Topeka, Kan. (1955)
- Dimethyl terephthalate
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 903/AS (NCI #C50055).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 903/AS (NCI #C50055).
- 3,5-Dimethyltetrahydro-1,3,5-2H-thioadiazine-2-thione, see Mylone
- O,O-Dimethyl-O-(2,4,5-trichlorophenyl) phosphorothioate, see Ronnel
- 3,5-Dinitrobenzamide
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7, 488 (1965)
- Dinitrobutylphenol
  - Rat - diet - 5-month...19:35
- 3,5-Dinitro-o-toluamide
- Dinitrotoluene
  - Bacteria - mutagenesis...26:3
  - Cultured mouse cells - mutagenesis...26:3
  - Rat - diet - 2-year...13:9
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
- 2,3-Dinitrotoluene
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
- 2,4-Dinitrotoluene
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 990/AS (NCI #C01865).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 990/AS (NCI #C01865).
- 2,6-Dinitrotoluene
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
- 3,4-Dinitrotoluene
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
- 3,5-Dinitrotoluene
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
- 1,4-Dioxane
  - Mouse - water - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 711/AS (NCI #C03689).
  - Rat - water - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 711/AS (NCI #C03689).
- Dioxathion
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 185/AS (NCI #C00395).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 185/AS (NCI #C00395).
  - Rat - oral - 2-year...Toxic. Appl. Pharm. 30(2), 275 (1974)
- Diphenyl
  - Rat - oral - 2-year...Food Res. 25, 328 (1960); and Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Diphenylamine
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S. Topeka, Kan. (1965); Toxicol. Appl. Pharmacol. 10, 362 (1967); and Toxicol. Appl. Pharmacol. 11, 184 (1967)
- Diphenylhydantoin
  - Cat - gavage - 44-day...11:33
- 1,1-Diphenylhydrazine hydrochloride
  - Mouse - gavage - gestation...31:15
- 4,4'-Diphenylmethane diisocyanate
  - Mouse - gavage - 2-year...5:19
  - Rat - gavage - 2-year...5:19
- 3-(2-Diphenylyloxy)-1,2-epoxypropane
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Direct Black 38
  - Mouse - diet...4:8
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54557).
  - Rat - diet...4:8
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54557).

- Direct Blue 6
  - Mouse - diet...4:10
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54579).
  - Rat - diet...4:10
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54579).
- Direct Brown 95
  - Mouse - diet...4:9
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54568).
  - Rat - diet...4:9
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54568).
- Disodium 4,4'-bis-((4-anilino-6-(N-methyl-2-hydroxyethylamino)-1,3,5-triazin-2-yl) amino) stilbene-2,2'-disulfonate
  - Dog - oral - 2-year...Food Cosmet. Toxicol. 13(5), 521 (1975)
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 13(5), 521 (1975)
- Disodium 4,4'-bis((4-anilino-6-morpholino-1,3,5-triazin-2-yl) amino stilbene-2,2'-disulfonate
  - Dog - oral - 2-year...Food Cosmet. Toxicol. 13 (5), 521 (1975)
- Disodium 4,4'-bis-(2-sulfostyryl) biphenyl
  - Dog - oral - 2-year...Food Cosmet. Toxicol. 13 (5), 521 (1975)
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 13 (5), 521 (1975)
- Disodium 5'-ribonucleotide, see Ribotide
- Disperse Yellow 3
  - Hamster - feed - carcinogenesis...37:39
  - Hamster - intratracheal - carcinogenesis...37:29
  - Rat - feed - carcinogenesis...37:39
  - Rat - intratracheal - carcinogenesis...37:39
- Distearyl thiodipropionic acid
  - Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)
- Disulfiram
  - Rat - ingestion - 18-month...14:11
- Disulfiram (with sodium nitrite)
  - Rat - diet - 2-year...30:25
- Disulfoton
  - E. coli - mutagenesis...25:39
  - Human lung culture - mutagenesis...25:39
  - Saccharomyces cerevisiae - mutagenesis...25:39
  - Salmonella typhimurium - mutagenesis...25:39
- 2,5-Dithiobiurea
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 534/AS (NCI #C03009).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 534/AS (NCI #C03009).
- Diuron
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
  - Rat - gavage - teratology...11:31
- DNBP
  - Human - epidemiology...43:23
  - Rat - diet - 5-month...19:35
- Docosenoic acid
  - Monkey - diet - 30-month...15:17
- Dodecyl benzene sodium sulfonate, see Santomerse No. 3
- Dodecyl gallate
  - Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org. 228 (1962)
- Dodine
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 3(1), 127 (1961); and Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Doxorubicin
  - Pig - injection - 18-week...24:29
- Drugs used in treatment of chronic disease
  - Human - epidemiology...40:11
- Dulcin
  - Rat - oral - 2-year...J. Amer. Pharm. Ass. 40, 583 (1951)
- Duprene
  - Rat - inhalation...3:4
- Dursban
  - Rat - pest control strip - 60-day...22:27
- Dyes
  - Human - workplace exposure - epidemiology...36:29
- Dyrene
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- EDTA
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-270 938/AS (NCI #C03974).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-270 938/AS (NCI #C03974).

  - Rat - intravenous - 12-week...15:19
- Emetine
  - Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 891/AS (NCI #C01605).
  - Rat - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 891/AS (NCI #C01605).
- Endosulfan
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 731/AS (NCI #C00566).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 731/AS (NCI #C00566).
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Endrin
  - E. coli - mutagenesis...22:19
  - Hamster - gavage - gestation...31:21
  - Human lung culture - mutagenesis...22:19
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 461/AS (NCI #C00157).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 461/AS (NCI #C00157).
  - Rat - gavage - gestation...31:23
  - Saccharomyces cerevisiae - mutagenesis...22:19
  - Salmonella typhimurium - mutagenesis...22:19
- Enflurane
  - Rat - inhalation - 22-day...17:41
- Environmental exposures (various agents)
  - Human - environmental exposure - epidemiology...39:7
- Environmental & occupational exposures (various agents)
  - Human - environmental & occupational exposures - epidemiology...39:7, 39:11
- Epichlorohydrin
  - Mouse - gavage - teratogenesis...34:7
  - Mouse - intramuscular injection - 3-month...28:39
  - Mouse - topical - 3-month...28:39
  - Rabbit - inhalation - gestation...19:11
- EPN
  - Chicken - oral - 90-day...19:31
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Epoxidized soybean oil, see Paraplex G-60 and G-62.
- 2-(3,4-Epoxycyclohexy)ethyltrimethoxysilane
  - Mouse - skin - lifetime...24:3
- 1,2-Epoxy-3-phenoxypropane
  - Rat - inhalation - 2-year...17:3
- Estradiol mustard
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 787/AS (NCI #C01570).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 787/AS (NCI #C01570).
- Estrogens, synthetic
  - Human - workplace exposure - epidemiology...36:41
- Etchlorvynol
  - Rat - gavage - 22-day...17:43
- Ethanol and vinyl chloride
  - Rat - drinking water, inhalation - 1-year ...9:9
- Ethanolamine
  - Rabbit - inhalation - 180-day...15:39
  - Rat - inhalation - 180-day...15:39
- Ether, butyl glycidyl
  - Mouse - intramuscular injection - 3-month...28:35
  - Mouse - topical - 3-month...28:35
- Ethion
  - E. coli - mutagenesis...24:35
  - Human lung fibroblast culture - mutagenesis...23:35
  - Saccharomyces cerevisiae - mutagenesis...23:35
  - Salmonella typhimurium - mutagenesis...23:35
- Ethionamide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 193/AS (NCI #C01694).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 193/AS (NCI #C01694).
- L-Ethionine
  - Wasp - diet - mutagenesis...34:27
- 2-Ethoxyethanol
  - Monkey - inhalation - psychomotor effects...37:3
  - Rat - inhalation - teratogenesis...37:3
- 3-Ethoxy-4-hydroxybenzaldehyde, see ethyl vanillin
- 4-Ethoxyphenylurea, see Dulcin
- Ethoxyquin
  - Rat - gavage - teratology...11:31
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Ethoxyquine
  - Drosophila melanogaster - mutagenesis...26:37
- Ethyl acrylate
  - Mouse - gavage - 2-year...7:37
  - Mouse - inhalation - 2-year...29:3
  - Rat - drinking water - 2-year...Toxicol.

Appl. Pharmacol. 6, 29 (1964)
Rat - gavage - 2-year...7:37
Rat - inhalation - 2-year...29:3
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 6(1), 29 (1964)
P,P-Ethyl DDD (Perthane)
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 582/AS (NCI #C02868).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 582/AS (NCI #C02868).
Ethyl 4,4'-dichlorobenzilate
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
O-Ethyl-S,S-dipropyl phosphorodithioate
Mouse - diet - 2-year...15:3
Rat - diet - 2-year...15:3
Ethylene
Rat - inhalation...3:9
2-Ethyl hexanediol-1,3
Rat - oral - 2-year....Insect Repellents 19, 87. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1955)
2-Ethylhexyl diphenyl phosphate, see Santicizer 141
Ethyl methylphenyl glycidate
Rat - oral - 2-year...Toxicol. Appl. Pharmaocl. 26, 58 (1973)
Ethyl phthalyl ethyl glycolate
Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Ethyl vanillin
Mouse - inhalation - long-term...5:7
Rat - inhalation - long-term...5:7
Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)
Rat - inhalation - 2-year...13:3
Ethylenebisisothiocyanate sulfide
Guinea pig - gavage - gestation...22:37
Hamster - gavage - gestation...22:37
Mouse - gavage - gestation...22:39
Rat - gavage - gestation...22:39
Ethylene chlorohydrin
Mouse - intraperitoneal - mutagenesis...30:3
Mouse - skin - 2-year...5:23
Rat - skin - 2-year...5:23
Ethylene dichloride
Mouse - inhalation...5:7
Rabbit - inhalation - 8-month...19:19
Rat - inhalation...5:7
Rat - inhalation - 8-month...19:9
Rat - inhalation - 3-generation...19:7
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 18, 83 (1971)
Ethylenediamine dihydrochloride
Rat - feed - 2-year...41:9
Ethylene glycol
Mouse - diet - 2-year...7:41
Rat - diet - teratology...36:9
Rat - diet - 2-year...7:43
Rat - diet - 3-generation...7:45
Rat - inhalation - 2-year...7:47
Rat - mutagenesis...36:17
Ethylene oxide
Drosophila melanogaster - feed - mutagenesis...27:9
Human - workplace exposure - epidemiology...36:37
Monkey - inhalation - 18-month...25:31
Mouse - inhalation - 2-year...7:11
Mouse - intraperitoneal - mutagenesis...30:5
Rat - inhalation - gestation...27:11
Rat - inhalation - mutagenesis...27:9
Rat - inhalation - 18-month...25:31
Rat - inhalation - 2-year...7:11, 9:7
Ethylene thiourea
Guinea pig - gavage - gestation...22:33
Hamster - gavage - gestation...22:33
Mouse - gavage - gestation...22:35
Rat - diet - carcinogenesis...39:25
Rat - gavage - gestation...22:35
Rat - gavage - lifetime...11:29
Rat - oral - 2-year...Food Cosmet. Toxicol. 13(5) 493 (1975)
Ethynerone
Dog - intravenous - lifespan...18:3
Monkey - intravenous - lifespan...18:3
Monkey - oral - long term...39:23
Ethynerone and mestranol
Monkey - oral - long term...39:23
Eugenol
Mouse - diet - 2-year...7:23
Rat - diet - 2-year...7:23
Fast Green FCF
Rat - oral - 2-year...Food Cosmet. Toxicol. 4, 389 (1966)
FD & C Blue No. 1
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8(1), 29 (1966)
FD & C Blue No. 2
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8(1), 29 (1966)
FD & C Red No. 3
Rat - diet - neurobiological effects...39:35
Rat - diet - behavioral toxicology...39:35
FD & C Red No. 40
Drosophila melanogaster - feed - mutagenesis...27:25
Rat - diet - neurobiological effects...39:37
Rat - diet - behavioral toxicology...39:37
Wasp - diet - mutagenesis...34:29
FD & C Violet No. 1
Dog - diet - long-term...8:15
Mouse - oral - 80-week...Food Cosmet. Toxicol. 12 (1), 21 (1974)
Rat - diet - 2-year...8:15
Rat - diet - 2-generation...8:15

- FD & C Yellow No. 6
  - Mouse - diet...4:2
  - Mouse - oral - 80-week...Food Cosmet. Toxicol. 12 (1), 1 (1974)
  - Rat - diet...4:2
- FD & C Yellow No. 10
  - Mouse - diet - 2-year...30:35
  - Rat - diet - 30-month...30:37
- Fenaminosulf, formulated
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 443/AS (NCI #C03010).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 443/AS (NCI #C03010).
- Fenfluramine
  - Rat - feed - gestation..21:21
- Fensulfothion
  - E. coli - mutagenesis...23:37
  - Human lung fibroblast culture - mutagenesis...23:37
  - Saccharomyces cerevisiae - mutagenesis...23:37
  - Salmonella typhimurium - mutagenesis...23:37
- Fenthion
  - Mouse - feed - 2-year...21:37
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 832/ASM (NCI C08651).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 832/ASM (NCI C08651).
  - Rat - feed - 2-year...21:37
- Ferbam
  - Mouse - diet - 6-month...30:15
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Ferbam (with nitrite)
  - Mouse - diet - 6-month...30:15
- Fibrous amphibole
  - Rat - intrapleural inoculation - lifespan...12:15
  - Rat - intratracheal inoculation - lifespan...12:15
- Fibrous glass
  - Human - workplace exposure - epidemiology...35:33
  - Monkey - inhalation - 18-month...27:5
  - Monkey - inhalation - 18-month...38:37
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- Firemaster PB-6 (polybrominated biphenyl mixture)
  - Rat - diet - 12-month...30:9
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  - Hamster - inhalation - 12-month...9:15
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  - Mouse - inhalation - 16-week...13:21
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  - Mouse - oral - 2-year...Toxicol. Appl. Pharmacol. 26, 438 (1973)
  - Rat - inhalation - 120-day...17:37
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  - Rat - inhalation - teratogenesis...35:13
  - Rat bone marrow - gavage - mutagenesis...35:5
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  Rat - inhalation - gestation...23:19
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  Rat - oral - 2-year...AMA Arch. Ind. Hyg. Occup. Med. 7, 282 (1953)
Glycerol monostearate
  Rat - oral - 2-year...J. Amer. Oil Chem. Soc. 28, 31 (1951)
gamma-Glycidoxypropyltrimethoxysilane
  Mouse - skin - lifetime...24:5
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  Mouse - feed - 8-week...27:29
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  Rat - oral - 2-year...Food Res. 3, 555 (1938)
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  Mouse - diet - 2-year...6:29
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  Rat - oral - 2-year...Naval Stores Review and Terpene Chemicals 74 (12), 4 (1965)
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  Mouse - diet - 2-year...6:23
  Rat - diet - 2-year...6:23
Gusathion
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 24, 405 (1973)
Guthion
  Dog - oral - 2-year...British Industrial Biological Research Association Bulletin 12(7), 359 (1973)
  Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 12(7), 359 (1973)
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  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-271 967/AS (NCI #C00180).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-271 967/AS (NCI #C00180).
  Rat - gavage - teratology...11:31
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  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Heptachloronorbornene
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2-Heptadecyl glyoxalidine acetate, see Glyodin
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  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8, 350 (1966)
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  Rat - oral - 2-year...Hercules Inc., unpub data
2,2',4,4',5,5' Hexabromobiphenyl
  Mouse - oral - 18-month...16:43
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  Rat - oral - 60-day...16:49
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  Cat - oral - 3-year...6:5
  Chicken - oral - 3-year...6:5
  Human - contaminated grain - epidemiology...39:13
  Monkey - oral - 2 1/2-year...17:7
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  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 668/AS (NCI #C04604).
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  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 525/AS (NCI #C02653).
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  Rat - oral - 2-year...Food Cosmet. Toxicol. 9, 491 (1971)
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  Mouse - gavage - teratogenesis...32:19
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  Rat - inhalation - teratogenesis...35:23
  Rat bone marrow - inhalation - mutagenesis...35:7
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  Rat - oral - 2-year...Food Cosmet. Toxicol. 13(2), 167 (1975)
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  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 791/AS (NCI #C01854).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 791/AS (NCI #C01854).
Hydrogen fluoride
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  Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)
Hydroxyalkane (C14-C18) sulfonate
  Rat - oral - 2-year...Toxicology 5 (3), 359 (1976)
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14-Hydroxydaunorubicine, with cysteamine
  Rat - intravenous injection...4:11
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  Rat - inhalation - 18-month...15:11
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  Rat - oral - 2-year...J. Amer. Pharm. Ass. 36, 335 (1947)
4-Hydroxy-3-methoxybenzaldehyde, see Vanillin
Hydroxypropyl distarch glycerol
  Rat - oral - 2-year...Food Cosmet. Toxicol. 12(5/6), 651 (1974)
Hydroxypropyl methylcellulose
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
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  Cat - gavage - 44-day...11:33
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  Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 853/AS (NCI #C01627).
  Rat - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 853/AS (NCI #C01627).
Indalone
  Rat - oral - 2-year...Insect Repellents 19, 87. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1955)
Indigo carmine

  Rat - oral - 2-year...Food Cosmet. Toxicol. 13(2), 167 (1975)
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  Mouse - intraperitoneal injection - lifetime...12:37
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  Rat - oral - 2-day...24:19
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  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 344/AS (NCI #C04568).
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  Rat - oral - 2-year...British Industrial Biological Research Bulletin 10(5), 245 (1971)
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  Rat - intraperitioneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 455/AS (NCI #C01547).
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  Human - workplace exposure - epidemiology...38:33
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  Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951).
d-Isoascorbyl palmitate
  Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)
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  Dog - inhalation...3:3
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  Dog - inhalation...3:3
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  Dog - inhalation...3:3
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  Dog - inhalation...3:3
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Isobutane, with Toluene
  Dog - inhalation...3:3
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Isobutane, with 1,1,1-trichloroethane
  Dog - inhalation...3:3
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Isobutane, with trichloroethylene
  Dog - inhalation...3:3
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  Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-275 677/AS (NCI #C01638).
  Rat - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-275 677/AS (NCI #C01638).
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  Dog - inhalation...3:3
  Mouse - inhalation...3:3
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  Rat - oral - 2-year...J. Agr. Food Chem. 11 (6), 468 (1963)
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  Mouse - whole body - teratogenesis...32:21
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  Mouse - whole body - teratogenesis...32:23
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  Mouse lymphoma - mutagenesis...35:9
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  Rat - inhalation - teratogenesis...35:11
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  Rat - oral - 2-year...Summaries of

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- Kepone
  - Hamster - intravenous - 160-day...31:25
  - Mouse - oral - 18-month...16:43
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  - Rat - ingestion - 49-day...14-29
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  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 641/AS (NCI #C01478).
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  - Human - workplace exposure - epidemiology...38:27
- Lead acetate
  - Monkey - ingestion - 4-year...14:33
  - Monkey - in utero/dam's milk - 5-month...14:33
  - Rat - diet - 12-week...15:19
  - Rat - drinking water - 3-month...17:21
  - Rat - drinking water - 150-day...13:19
  - Rat - drinking water - 7-month...13:37
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  - Rat - ingestion - 120-day...10:27
  - Rat - in utero/dam's milk/ingestion - 200-day...14:27
- Lead carbonate
  - Rat - dam's milk - 21-day...14:23
  - Rat - ingestion - 50-day...14:23
- Lead chloride
  - Rat - drinking water - 90-day...11:15
- Lead monoxide
  - Hamster - intratracheal instillation - 16-week...15:25
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  - Human - workplace exposure - epidemiology...36:23
- Leptophos
  - Cat - oral - 60-day...12:17
  - Chicken - oral - 90-day...19:29
- Lidoflazine
  - Dog - oral - 4-year...Toxicol. Appl. Pharmacol. 33(2), 376 (1975)
- Light Green S F Yellowish
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 4, 389 (1966)
- Lindane
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 480/AS (NCI #C00204).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 480/AS (NCI #C00204).
  - Rat - gavage - teratology...11:31
  - Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials of the U.S. on Current Developments, Part II. Pesticides. (2), 47 (1952)
- Linuron
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 6, 171 (1968)
  - Rat - gavage - teratology...11:31
- Lithocholic acid
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 476/AS (NCI #C03861).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 476/AS (NCI #C03861).
- Locust bean gum
  - Mouse - diet - 2-year...6:27
  - Rat - diet - 2-year...6:27
  - Rat - ingestion - 2-year...11:3
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  - Rat - ingestion - 6-week...11:35
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  - Mouse - intraperitoneal injection - lifetime...12:37
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  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 858/AS (NCI #C08628).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 858/AS (NCI #C08628).
- Malathion
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 527/AS (NCI #C00215).

  Rat - diet - 2-year...24:13
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 527/AS (NCI #C00215).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-300 301/AS (NCI #C00215B).
  Rat - gavage - teratology...11:31
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
  Rat - feed - 2-year...26:7
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  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
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  Mouse - gastric intubation - teratology...12:21
  Rat - gastric intubation - teratology...12:21
  Rat - gastric intubation - to motor impairment...12:23
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
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Manganese and manganese compounds
  Human - workplace exposure - epidemiology...38:39
  Mouse - dam's milk - 21-day...14-31
  Mouse - gavage - 5-week...23:7
  Mouse - ingestion - 90-day...14-31
  Mouse - intraperitoneal injection - lifetime...12:37
  Rat - diet - lifetime...19:41
  Rat - intramuscular injection - 12-month...23:7
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  Mouse - gavage - 5-week...23:9
  Rat - intramuscular injection - 12-month...23:9
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  Mouse - gavage - 5-week...23:11
  Rat - diet - lifetime...13:35
  Rat - feed - 8-month...26:15
  Rat - feed - 2-generation...21:33
  Rat - intramuscular injection - 12-month...23:11
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  Mouse - diet - 2-year...7:25
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  Mouse - diet - 2-year...5:29
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  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 761/AS (NCI #C50000).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 761/AS (NCI #C50000).
Mercaptobenzothiazole
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Mercury acetate
  Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides. 16(2), 47 (1952)
Merphos
  Chicken - oral - 90-day...19:25
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  Dog - intravenous - lifespan...18:3
  Monkey - intravenous - lifespan...18:3
  Monkey - oral - long term...39:23
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  Rat - oral - 2-year...Toxicology 4(1), 97 (1975)
Methapyrilene
  Mouse - diet - 2-year...30:19
  Rat - diet - 2-year...30:19
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  E. coli - mutagenesis..23:41
  Human lung fibroblast culture - mutagenesis...23:41
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 271/AS (NCI #C00497).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 271/AS (NCI #C00497).
  Rat - gavage - teratology...11:31
  Rat - gavage - 70-day...15:23
  Rat - oral - 2-year...J. Pharmacol. Exp. Thera. 104, 60 (1952); and Chemicals in Foods: A Report to the Association of Food and Drug Officials, Part II. Pesticides 16 (2), 47 (1952)
  Saccharomyces cerevisiae - mutagenesis...23:39
  Salmonella typhimurium - mutagenesis...23:41
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  Drosophila melanogaster - mutagenesis...37:19
  Mouse - inhalation - mutagenesis...37:19
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  Rat - inhalation - 2-year...32:7
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  Rat - slow release tablet - gestation...24:25
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  Mouse - inhalation - mutagenesis...37:13
  Rabbit - inhalation - gestation...27:11
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  Rat - inhalation - 6-month...26:19
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  Rat - inhalation - mutagenesis...37:13
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  Rat - inhalation - 22-day...17:39
  Rat - inhalation - 5-month...17:15
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  Mouse - inhalation - 3-month...26:13
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  Mouse - inhalation - lifetime...26:13
  Rat - inhalation - 3-month...26:13
  Rat - inhalation - 2-year...30:7
  Rat - inhalation - lifetime...26:13
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  Human - inhalation...26:31
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  Mouse - ingestion - 8-week...12:29
  Mouse - inhalation - 90-day...15:5
  Monkey - inhalation - 90-day...15:5
  Monkey - intravenous - 6-month...16:21
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  Rat - ingestion - teratology...12:31
  Rat - inhalation - 90-day...15:5
  Rat - intraperitoneal injection - 3-month...28:9
  Rat - intravenous - 6-month...16:21
6-Methyl-2H-1-benzopyran-2-one, see 6-Methylcoumarin
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  Rat - oral - 2-year...Food Cosmet. Toxicol. 11, 943 (1973)
6-Methylcoumarin
  Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)
o-Methyl-o-(1,4-dichlorophenyl)-isopropyl phosphoroamidethioate
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
N-Methyl dicyclohexylamine
  DNA synthesis bioassay - mutagenesis...37:29
  Drosophila melanogaster - mutagenesis...37:29
  Mouse - inhalation - mutagenesis...37:29
  Rat - inhalation - mutagenesis...37:29
4-4'-Methylenebis-2-chloroaniline
  Dog - gelatin capsules...2:5
4,4'-Methylenebis(N,N-Dimethyl)Benzenami
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 856/AS (NCI #C01990).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 856/AS (NCI #C01990).
Methylene chloride
  Drosophila melanogaster - mutagenesis...25:23
  Hamster - inhalation...1:2
  Human - workplace exposure...36:33
  Mouse - gavage - 2-year...6:7
  Mouse - inhalation - 2-year...7:21
  Rat - gavage - 2-year...6:7
  Rat - inhalation...1:2
  Rat - inhalation - 2-year...7:21
4,4'-Methylenedianiline
  Mouse - diet - 2-year...6:21
  Rat - diet - 2-year...6:21
1,2-Methylenedioxy-4-allylbenzene, see Dihydrosafrole
1,2-Methylenedioxy-4-propylbenzene, see Dihydrosafrole
4,4'(1-Methyl-1,2-ethanediyl)bis-2,6 piperazinedione
  Dog - intravenous -78 day...7:49
Methylethylcellulose
  Rat - oral - 2-year...Food Cosmet. Toxicol. 6, 449 (1968)
Methyl ethyl ketone
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Methyl ethyl ketone, with isobutane
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation... 3:3
Methyl ethyl ketone, with propellant 11
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation... 3:3
Methylglyoxal
  Rat - oral - 22-day...17:45
Methyl heptine carbonate
  Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8, 265 (1969)
Methyl p-hydroxybenzoate
  Rat - oral - 2-year...J. Amer. Pharm. Ass. 45, 260 (1956)
Methylmercury chloride
  Monkey - in utero/dam's milk - 170-day...14:17
  Rat - drinking water - 6-month...17:11
Methyl methacrylate
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 6(1), 29 (1964)
  Mouse - inhalation - 2-year...7:7
  Rat - inhalation - 2-year...7:7
Methyl methanesulfonate
  Wasp - diet - mutagenesis...33:35
Methyl naphthalene acetic acid
  Rat - oral - 2-year...Chemicals in Foods:

A Report to the Association of Food and Drug Officials, Part II. Pesticides 16 (2), 47 (1952)
2-Methyl-1-nitroanthraquinone
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 439/AS (NCI #C01923).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 439/AS (NCI #C01923).

Methyl parathion
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 891/AS (NCI #C02971).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 891/AS (NCI #C02971).

Methylpolysiloxane
- Drosophila melanogaster - mutagenesis...26:41
- Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)

N-Methyl-2-pyrrolidene
- Rat - inhalation - 2-year...17:5

Methyl salicylate
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(5), 576 (1963)
- Rat - diet - behavioral teratology...40:7
- Rat - diet - neurobiological effects...40:7

5-Methyl-tetrahydrohomofolic acid
- Dog - intravenous - 46-day...14:7
- Dog - intravenous - 50-day...14:7
- Dog - intravenous - 55-day...14:7
- Dog - intravenous - 78-day...14:7
- Monkey - intravenous - 50-day...14:7

Metronidazole
- Wasp - diet - mutagenesis...34:35

Mexacarbate
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 471/AS (NCI #C00544).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 471/AS (NCI #C00544).

Michler's Ketone
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 855/AS (NCI #C02006).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 855/AS (NCI #C02006).

Microwave radiation
- Human - workplace exposure - epidemiology...36:39
- Monkey - head - 1-year...21:41
- Monkey - whole body - 16-month...13:23
- Mouse - whole body - gestation...20:29, 20:41
- Mouse - whole body - teratogenesis...33:9
- Mouse - whole body - 3-week...20:37
- Rat - whole body - 3-week...19:39
- Rat - whole body - 3-month...20:15 20:17, 20:19, 20:21
- Rat - whole body - gestation...20:23, 20:25, 29:11
- Rat - whole body - organogenesis...22:41
- Rat - whole body - perinatally...20:39
- Rat - whole body - 16-week...20:27

Minoxidil
- Beagle dog - diet - 1-month...25:29

Mirex
- Deer mouse - ingestion - 18-month...14:25
- Goat - ingestion - 18-week...10:21
- Goat - ingestion - 22-week...10:21
- Goat - ingestion - 61-week...10:21
- Goat - ingestion - 65-week...10:21
- Mouse - diet - 2-year...30:21
- Mouse - gastric intubation - teratology...12:19
- Mouse - oral - 18-month...16:43
- Mouse - subcutaneous injection - 18-month...16:43
- Rat - diet - 2-year...30:21
- Rat - gastric intubation - teratology...12:19
- Rat - ingestion - 49-day...14:29

Mitomycin-C
- Wasp - diet - mutagenesis...32:33

MM 0
- Rat - feeding - 160-day...12:27

MMT
- Monkey - intravenous - 6-month...16:21
- Rat - intravenous - 6-month...16:21

Molybdenum
- Mouse - intraperitoneal injection - lifetime...12:37

Monochloroacetaldehyde 2,4-dinitrophenylhydrazone, see Olin 1763

Monochlorobenzene
- Human - workplace exposure...36:33
- Rabbit - inhalation - 24-week...15:37
- Rat - inhalation - 24-week...15:37

Monopotassium glutamate
- Drosophila melanogaster - feed - mutagenesis...27:27

Monosodium glutamate
- Rat - diet...8:5
- Rat - diet - behavioral teratology...39:27
- Rat - diet - neurobehavioral effects...39:27

Monuron
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Monuron (with sodium nitrite)
- Rat - diet - 2-year...30:27

Motor fuel, unleaded
- Mouse - inhalation - 2-year...21:3
- Rabbit - inhalation - 6-week...25:3
- Rat - inhalation - 2-year...21:3

- Rat - inhalation - 6-week...25:3
- Motor oil
  - Mouse - skin - 2-year...43:7
- Motor oils, API Composite
  - Mouse lymphoma - mutagenesis...35:3
  - Rat bone marrow - gavage - mutagenesis...35:3
  - Salmonella typhimurium - mutagenesis...35:3
- Mycotoxins
  - Mouse - ingestion - 3-month...14:3
  - Mouse - intraperitoneal - 3-month...14:3
  - Poultry - ingestion - 3-month...14:3
  - Poultry - intraperitoneal - 3-month...14:3
- Mylone
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 9, 521 (1966)
- Mylone 45
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3), 315 (1959)
- Myrj 45
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3), 315 (1959)
- Myrj 52
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3), 315 (1959)
- Naled
  - Rat - gavage - teratology...11:31
- N-(1-naphthyl)ethylenediamine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-289 733/AS (NCI #C03281).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-289 733/AS (NCI #C03281).
- 1,5-Naphthalenediamine
- Naphtha, varnish makers and painters
  - Rat - teratogenesis...35:25
- Naphthas
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Naphthas, with isobutane
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Naphthas, with propellant 11
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- beta-Naphthylamine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 646/AS (NCI #C03021).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 646/AS (NCI #C03021).
  - Wasp - diet - mutagenesis...34:37
- 1-Naphthyl-N-methyl carbamate
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
- alpha-Naphthylthiourea, see ANTU
- Neoprene
  - Rat - inhalation...3:4
- Nickel
  - Mouse - gavage - 5-week...23:13
  - Mouse - intraperitoneal injection - lifetime...12:37
  - Rat - intramuscular injection - 12-month...23:13
- Nickel oxide
  - Mouse - gavage - 5-week...23:15
  - Rat - intramuscular injection - 12-month...23:15
- Nicotine
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Nithiazide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 897/AS (NCI #C03792).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 897/AS (NCI #C03792).
- Nitrilotriacetic acid
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 177/AS (NCI #C02766).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 177/AS (NCI #C02766).
- 5-Nitroacenaphthene
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 347/AS (NCI #C01967).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 347/AS (NCI #C01967).
- 3'-Nitro-p-Acetophenetide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 857/AS (NCI #C01978).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number,PB-299 857/AS (NCI #C01978).
- Methylmercury
  - Human - prenatal exposure - epidemiology...41:15
  - Human - early postnatal exposure - epidemiology...41:15
- 5-Nitro-o-anisidine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 411/AS (NCI #C01934).

- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 411/AS (NCI #C01934).
- 4-Nitroanthranilic acid
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 942/AS (NCI #C01945).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 942/AS (NCI #C01945).
- 6-Nitrobenzimidazole
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 834/AS (NCI C01912).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 834/AS (NCI C01912).
- Nitrofen
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 440/AS (NCI #C00420).
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-296 038/AS (NCI #C00420).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 440/AS (NCI #C00420).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-296 038/AS (NCI #C00420).
- Nitrogen dioxide
  - Baboon - inhalation - 6-month...12:39
  - Guinea pig - inhalation - 6-month...12:39
  - Monkey - inhalation - 1-year...12:39
  - Monkey - inhalation - 11-year...14-35
  - Mouse - inhalation - 3-month...13:17
  - Mouse - inhalation - 4-month...12:13
  - Mouse - inhalation - 1 1/2-year...14:13
  - Rat - inhalation - 30-day...12:11
  - Rat - inhalation - 1-year...12:9
  - Rat - inhalation - 2 1/2-year...14:21
- Nitrogen dioxide, and high/low salt diets
  - Rat...39:17
- Nitrogen oxides
  - Rat - inhalation - 90-day...10:33
- Nitroglycerin
  - Human - cardiovascular - epidemiology...43:21
- Nitromethane
  - Rabbit - inhalation - 6-month...16:25
  - Rat - inhalation - 6-month...16:25
- 1-Nitronaphthalene
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 310/AS (NCI #C01956).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 310/AS (NCI #C01956).
- 2-Nitro-p-phenylenediamine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 304/AS (NCI #C02222).
  - Mouse - gavage - teratogenesis...34:13
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 304/AS (NCI #C02222).
  - Rat - injection - 10-week...8:17
- 4-Nitro-o-phenylenediamine
  - Mouse - gavage - teratogenesis...34:19
  - Rat - i.p. injection - 10-week...25:27
  - Wasp - diet - mutagenesis...34:21
- 1-Nitropropane
  - Rat - inhalation - 18-month...26:21
  - Rat - inhalation - 2-year...41:7
- 2-Nitropropane
  - DNA synthesis bioassay - mutagenesis...37:23
  - Drosophila melanogaster - mutagenesis...37:23
  - Mouse - inhalation - mutagenesis...37:23
  - Rabbit - inhalation - 6-month...16:25
  - Rat - inhalation - 6-month...16:25
  - Rat - inhalation - 18-month...26:23
  - Rat - inhalation - 2-year...41:7
  - Rat - inhalation - mutagenesis...37:23
- 3-Nitropropionic acid
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 102/AS (NCI #C03076).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 102/AS (NCI #C03076).
- Nitrosamines
  - Human - workplace exposure - epidemiology...36:13
- N-Nitrosodiethanolamine
  - Rat - gavage - 8-week...27:7
- p-Nitrosodiphenylamine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 500/AS (NCI #C02244).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 500/AS (NCI #C02244).
- Nitrosopyrrolidine

  Mouse - ingestion - 18-month...16:9
  Rat - ingestion - lifetime...16:11
4-Nitrotoluene
  Bacteria - mutagenesis...26:5
  Cultured mouse cells - mutagenesis...26:5
5-Nitro-o-toluidine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 872/AS (NCI #C01843).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 872/AS (NCI #C01843).
Nitrous oxide
  Drosophila melanogaster - feed - mutagenesis...27:13
  Rabbit - inhalation - gestation...27:15
  Rat - inhalation - 104-week...16:27
  Rat - inhalation - gestation...27:15
  Rat - inhalation - mutagenesis...27:13
gamma-Nonalactone
  Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8, 265 (1969)
Nonferrous smelter emissions
  Human - environmental exposure - epidemiology...39:5
  Human - workplace exposure - epidemiology...39:5
Nonferrous smelter emissions, and smoking
  Human - environmental exposure - epidemiology...39:5
  Human - workplace exposure - epidemiology...39:5
Nonyl phenoxy polyethylene (9) glycol ether, see Tergitol nonionic TP-9
Nordihydroguaiaretic acid
  Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)
Nuclear radiation
  Shipyard workplace exposure - epidemiology...35:29
Nylon
  Rat - oral - 2-year...DuPont Co., Haskell Laboratories, unpub. data
Occupational exposures (various agents)
  Human - occupational exposure - epidemiology...39:7, 39:11
Occupational hazards
  Human - reproduction - epidemiology...43:19
Ochratoxins
  Mouse - ingestion - 3-month...14:3
  Mouse - intraperitoneal - 3-month...14:3
  Poultry - ingestion - 3-month...14:3
  Poultry - intraperitoneal - 3-month...14:3
Ochratoxin A
  Pig - diet - 4-week...9:31
  Pig - diet - 4-month...9:31
  Pig - diet - 2-year...9:31
Octadecylamine
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(5), 610 (1962)
Octyl gallate
  Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org. 228 (1962)
p-tert-Octylphenoxy-polyethoxyethanols, see Triton X-405
Oil shale
  Monkey - inhalation - 26-week...20:3
  Monkey - skin application - 18-month...20:5
  Rat - inhalation - 26-week...20:3
Oil shale dusts
  Rat - gavage - 3-week...27:39
Oil shale, raw and processed
  Cultured mammalian cells - mutagenesis...21:7
  Cultured rat cells - mutagenesis...21:7
  Rat - inhalation - gestation...21:9
  Salmonella typhimurium - mutagenesis...21:7
  Yeast - mutagenesis...21:7
alpha-Olefin (C14-C18) sulfonate
  Rat - oral - 2-year...Toxicology 5 (3), 359 (1976)
Olin 1763
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8, 472 (1966)
Oral contraceptive steroids
  Monkey - oral - long term...39:23
Orange G
  Mouse - diet...4:5
  Rat - diet...4:5
Organochlorine compounds
  Minnow - aquarium water - 30-day...16:41
Organophosphorous compounds
  Human - workplace exposure - epidemiology...35:27
4,4-Oxydianiline
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
4,4'-Oxydianiline
  Rat - diet...2:2
  Rat - diet - 2-year...25:11
Ozone
  Guinea pig - inhalation - 6-month...13:13
  Human - inhalation - 3-year...13:25
  Monkey - inhalation - 1-year...12:9
  Monkey - inhalation - 11-year...14:35
  Mouse - inhalation - 3-month...13:17
  Mouse - inhalation - 4-month...12:13
  Mouse - inhalation - 6-month...13:13
  Rat - inhalation - 90-day...10:33
  Rat - inhalation - 1-year...12:9
  Rat - inhalation - 1 1/2-year...14:21
Ozone, and high/low salt diets
  Rat...39:17
P-4000
  Rat - oral - 2-year...J. Amer. Pharm. Ass. 40, 583 (1951)
Painting industry (excluding paint manufacture)
  Human - workplace exposure - epidemiology...36:27
FALA
  Dog - intravenous - 1-year...16:17
  Monkey - intravenous - 1-year...16:17
  Mouse - oral - 30-day...16:17

Paraplex G-60 and Paraplex G-62
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 2(6), 649 (1960)

Parathion
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 803/AS (NCI #C00226).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 803/AS (NCI #C00226).
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Parez 607
- Rat - oral - 2-year...American Cyanamid Co., unpub. data

Particulate matter
- Mouse - inhalation - 3-month...13:17

Patulin
- Rat - gavage - 30-month...9:35

PCNU
- Dog - intravenous - 55-day...8:27

Penicillic acid
- Dog - intravenous - 8-day...8:27
- Dog - intravenous - 78-day...8:27
- Rat - diet - 2-generation...9:29

Pentachlorobenzene
- Rat - diet - 100-day...19:37

Pentachloroethane
- Mouse - gavage - 2-year... 6:13
- Rat - gavage - 2-year... 6:13

Pentachloronitrobenzene
- Dog - oral - 2-year...Toxicol. Appl. Pharmacol. 18, 522 (1971)
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 732/AS (NCI #C00419).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 732/AS (NCI #C00419).

Pentachlorophenol
- Cow - diet - 8-week...15:15
- Cow - diet - 4-month...22:9
- Guinea pig - diet - 64-day...15:13
- Minnow - aquarium water - 28-day...32:9

Pentamethylmelamine, monohydrochloride
- Dog - intravenous - 1-year...16:15
- Monkey - intravenous - 1-year...16:15
- Mouse - oral - 30-day...16:15

Perchloroethylene, see also Tetrachloroethylene

Perchloroethylene
- Dog - inhalation...3:3
- Hamster - inhalation - 2-year...7:19
- Human - dry cleaning workplace exposure - epidemiology...35:39
- Mouse - gavage - 2-year...8:51
- Mouse - inhalation...3:3
- Mouse - inhalation - 2-year...7:19
- Mouse - skin test - lifespan...10:11
- Rabbit - inhalation - teratology...19:15
- Rat - exposure to vapor - 1-year...2:6
- Rat - gavage - 2-year...8:51, 29:19
- Rat - inhalation...3:3
- Rat - inhalation - 7-day...14:9
- Rat - inhalation - 1-year...15:9
- Rat - inhalation - 2-year...7:19
- Rat - inhalation - teratology...19:15

Perchloroethylene, with isobutane
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Perchloroethylene, propellant 11
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Peroxyacetyl nitrate
- Guinea pig - inhalation - 6-month...13:13
- Mouse - inhalation - 6-month...13:13

Perthane
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Pesticides
- Human - workplace exposure - epidemiology...36:11

Petrolatum
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7(3), 382 (1965)

Petroleum, crude oil fractions
- Salmonella typhimurium - mutagenesis...35:15, 35:17

Petroleum distillates
- Rat - intratracheal injection...2:15
- Rat - intravenous injection...2:15

Petroleum products, diesel oil
- Human - epidemiology...43:17
- Rat - inhalation...43:11

Petroleum waxes No. 2, 8, 12, 15, and 20
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4, Supp., 49 (1962)

Phenacetin
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7, 503 (1965)

Phenazopyridine hydrochloride
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 207/AS (NCI #C01672).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 207/AS (NCI #C01672).

Phencyclidine
- Mouse - gavage - teratogenesis...34:15

Phenesterin
- Mouse - gavage - carcinogenesis...National

- Cancer Institute Bioassay Report available from NTIS, order number PB-283 361/AS (NCI #C01558).
- Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 361/AS (NCI #C01558).

Phenformin
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 176/AS (NCI #C01741).
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 176/AS (NCI #C01741).

Phenol
- Minnow - aquarium water - 28-day...31:9
- Mouse - drinking water - 2-year...32:41
- Rat - drinking water - 2-year...32:41
- Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)

Phenol, 5%
- Rabbit - instilled in eye...2:18

Phenoxybenzamine hydrochloride
- Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 095/AS (NCI #C01661)
- Rat - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 095/AS (NCI #C01661)

Phenyldimethylurea
- Rat - oral - 2-year...Allied Chemical Corp., unpub. data

1-Phenyl-3-methyl-5-pyrazolone
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 122/AS (NCI #C03952).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 122/AS (NCI #C03952).

o-Phenylenediamine
- Wasp - diet - mutagenesis...33:39
- Wasp - diet - mutagenesis...34:23

o-Phenylenediamine, 4-chloro-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 362/AS (NCI #C03292).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 362/AS (NCI #C03292).

o-Phenylenediamine, 4-nitro
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 306/AS (NCI #C03941).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 306/AS (NCI #C03941).

m-Phenylenediamine
- Rat - injection - 10-week...8:17
- Wasp - diet - 2-year...34:33

m-Phenylaminediamine,4-chloro-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 201/AS (NCI #C03305).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 201/AS (NCI #C03305).

p-Phenylenediamine dihydrochloride
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 124/AS (NCI #C03930).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 124/AS (NCI #C03930).

p-Phenylenediamine,N-phenyl-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 856/AS (NCI #C02233).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 856/AS (NCI #C02233).

p-Phenylenediamine sulphate, 2-chloro-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 370/AS (NCI #C03316).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 370/AS (NCI #C03316).

Phenyl mercuric acetate
- Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)

o-Phenylphenol
- Rat - oral - 2-year...J. Pharm. 104, 202 (1952)

Phosalone
- Rat - gavage - teratology...11:31

Phosdrin
- Rat - gavage - teratology...11:31

Phosphamidon
  Mouse - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-288 800/AS
   (NCI #C00588).
  Rat - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-288 800/AS
   (NCI #C00588).
Phosphate fertilizers
  Human - workplace exposure - epidemiology...36:21
Phosphated distarch phosphate
  Rat - oral - 2-year...Food Cosmet.
   Toxicol. 12(5/6), 651 (1974)
Phosphatidic acids and triglycerides
  Rat - oral - 2-year...Food Cosmet.
   Toxicol. 11, 755 (1973)
Photodieldrin
  Mouse - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-274 393/AS
   (NCI #C00599).
  Rat - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-274 393/AS
   (NCI #C00599).
Phthalamide
  Mouse - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-293 831/AS
   (NCI #C03612).
  Rat - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-293 831/AS
   (NCI #C03612).
Phthalic anhydride
  Mouse - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-293 594/AS
   (NCI #C03601).
  Rat - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-293 594/AS
   (NCI #C03601).
Picloram
  Mouse - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-276 471/AS
   (NCI #C00237).
  Rat - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-276 471/AS
   (NCI #C00237).
Pimaricin
  Rat - oral - 2-year...Toxicol. Appl.
   Pharmacol. 8(1), 97 (1966)
Piperazine dihydrochloride
  Drosophila melanogaster - mutagenesis...26:35
Piperine (with sodium nitrite)
  Rat - diet - 2-year...30:29
Piperonal
  Rat - oral - 2-year...British
   Industrial Biological Research
   Association Bulletin 8, 265 (1969)
Piperonyl butoxide
  Mouse - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-288 753/AS
   (NCI #C002813).
  Rat - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-288 753/AS
   (NCI #C002813).
  Rat - gavage - teratology...11:31
  Rat - oral - 2-year...Summaries of
   Pesticide Toxicity. Association
   of Food and Drug Officials of the
   U.S., Topeka, Kan. (1965)
Piperonyl sulfoxide
  Mouse - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-288 788/AS
   (NCI #C02824).
  Rat - feed - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-288 788/AS
   (NCI #C02824).
Pivalolactone
  Mouse - gavage - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-287 645/AS
   (NCI #C04126).
  Rat - gavage - carcinogenesis...National
   Cancer Institute Bioassay Report available
   from NTIS, order number PB-287 645/AS
   (NCI #C04126).
Platinum dioxide
  Hamster - intratracheal instillation
   - 16-week...15:25
Plywood, pulp, and paper industry
  Human - workplace exposure - epidemiology...36:19
PMM
  Dog - intravenous - 1-year...16:15
  Monkey - intravenous - 1-year...16:15
  Mouse - oral - 30-day...16:15
Polyacrylamide, see Separan AP30 and
  Separan NP10
Polyalkylene glycol ether, see Tergitol
  nonionic XD
Polybrominated biphenyls, see also Firemaster,
  Firemaster FF-1, etc.
Polybrominated biphenyls
  Cow - oral - growth...41-3
  Cow - oral - milk production...41-3
  Cow - oral - reproduction...41-3
  Cow - oral - 3-year...6:3
  Human - environmental exposure - epidemiology...40:15
  Human - workplace exposure - epidemiology...40:15
  Rat - diet - 5-week...9:27
  Rat - gavage - 14-month...10:23

- Polychlorinated biphenyl, see also tetrachlorobiphenyl Arochlor, Aroclor
- Polychlorinated biphenyls
  - Dog - 60-day...8:19
  - Human - workplace exposure - epidemiology...35:41
  - Rat - diet - 5-week...9:27
  - Rat - feed - 47-week...9:23
  - Rat - gavage - gestation...18:37
- Polydimethylsiloxane
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 12(4), 443 (1974)
- Polyethylene glycol (mol. wt. 200, 400, 1500, 1540, and 4000)
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
- Polyethylene glycol homolog, containing 90,000 ethoxyl groups terminated by hydroxyls, see Polyox WSR301
- Polyethylene polypropylene glycol, see Ucon 25 H2005 and Ucon 75 H1400
- Polygard
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5, 342 (1964)
- Polymerized turpentine resin
  - Rat - oral - 2-year...Hercules Inc., unpub. data
- Polyox WSR 301
  - Rat - oral - 2-year...Mellon Institute, unpub. data
- Polyoxyethylene (8) stearate, see Mylone 45 or Myrj 45
- Polyoxyethylene (20) monopalmitate, see Tween 40
- Polyoxyethylene (20) sorbitan monolaurate, see Tween 20
- Polyoxyethylene (20) sorbitan monooleate, see Tween 80
- Polyoxyethylene (20) sorbitan monostearate, see Tween 60
- Polyoxyethylene (20) sorbitan tristearate, see Tween 65
- Polyoxyethylene (40) stearate, see Myrj 52
- Polyvinyl bromide
  - Mouse - skin application...3:7
  - Mouse - subcutaneous injection...3:7
  - Rat - intragastric intubation...3:7
- Polyvinyl chloride particulate
  - Guinea pig - inhalation - 18-month...26:27
  - Monkey - inhalation - 18-month...26:27
  - Rat - inhalation - 18-month...26:27
- Polyvinyl chloride, containing vinyl chloride
  - Rat - diet...1:8
- Polyvinyl chloride, free of vinyl chloride
  - Rat - diet...1:8
- Ponceau MX
  - Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8(5), 281 (1969)
- Ponceau SX (C.I. 14700)
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8(2),306 (1966)
- Ponceau 3R (C.I. 16155)
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(1), 105 (1963)
- Potash (potassium oxide)
  - Human - epidemiology...43:17
- Potash (potassium carbonate)
  - Human - epidemiology...43:17
- Potassium antimonyl tartrate, see tartar emetic
- Potassium bromate
  - Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents. Tech. Rep. Ser. Wld. Hlth. Org. 281 (1964)
- Potassium iodide
  - Rat - diet - behavioral teratology...40:5
  - Rat - diet - neurobiological effects...40:5
- Potassium nitrate
  - Rat - feed - 10-week...27:33
- Potassium nitrite
  - Rat - diet - 10-week...28:31
- Printing trades
  - Human - workplace exposure - epidemiology...36:5
- Procarbazine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 902/AS (NCI #C01810B).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 902/AS (NCI #C01810B).
  - Wasp - diet - mutagenesis...33:41
- Prochlorperazine
  - Rat - feed - gestation...21:23
- Proflavine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-268 553/AS (NCI #C04137).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-268 553/AS (NCI #C04137).
- Propanediol, 2-bromo-2-nitro-1,3-
  - Rat - inhalation - 2-year...41:7
- Propanil
  - E. coli - mutagenesis...24:37
  - Human lung culture - mutagenesis...24:37
  - Saccharomyces cerevisiae - mutagenesis...24:37
  - Salmonella typhimurium - mutagenesis...24:37
- n-Propanol
  - Mouse - skin painting - lifetime...23:5
- Propellant 11, with ortho-dichlorobenzene
  - Dog - inhalation...3:3

  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Propellant 11, with isopropanol
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Propellant 11, with methyl ethyl ketone
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Propellant 11, with perchloroethylene
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Propellant 11, with naphthas
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Propellant 11, with toluene
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Propellant 11, with 1,1,1-trichloroethane
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Propellant 11, with trichloroethylene
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Propellants, aerosol
  - Cat - inhalation...8:21
  - Dog - inhalation...8:21
  - Monkey - inhalation...8:21
  - Mouse - inhalation...8:21
  - Rat - inhalation...8:21
- 1-n-Propoxy-2-amino-4-nitrobenzene, see P-4000
- Propoxyphene
  - Rat - feed - gestation...21:25
- Propylene
  - Mouse - inhalation - 2-year... 7:13
  - Rat - inhalation - 2-year... 7:13
- Propylene glycol
  - Dog - oral - 2-year...Food Cosmet. Toxicol. 9, 479 (1971)
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 10, 151 (1972)
- Propylene oxide
  - Drosophila melanogaster - feed - mutagenesis...27:17
  - Monkey - inhalation - 18-month...25:33
  - Mouse - inhalation - 2-year...7:15
  - Rabbit - inhalation - gestation...27:19
  - Rat - inhalation - 13-week...41:11
  - Rat - inhalation - 18-month...25:33
  - Rat - inhalation - 2-year...7:15, 41:13
  - Rat - inhalation - gestation...27:19
  - Rat - inhalation - mutagenesis...27:17
- Propyl gallate
  - Rat - diet - 2-year...7:31
  - Rat - oral - 2-year...Advan. Food Res.3, 197 (1951)
  - Mouse - diet - 2-year...7:31
- n-Propyl gallate
  - Mouse - oral - 21-month...Food Cosmet. Toxicol. 12 (1), 125 (1974)
- Propyl p-hydroxy benzoate
  - Rat - oral - 2-year...J. Amer. Pharm. Ass. 45, 260 (1956)
- Pyrazinamide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 251/AS (NCI #C01785).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 251/AS (NCI #C01785).
- Pyrethrum
  - Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)
- Pyridine hydrochloride, 3-chloromethyl-
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 125/AS (NCI #C03838).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 125/AS (NCI #C03838).
- Pyridoxine
  - Dog - capsule - 100-day...32:29
- Pyrimethamine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 608/AS (NCI #C01683).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 608/AS (NCI #C01683).
- Pyrolysis effluent
  - Hamster - gavage - 20-week...27:3
- p-Quinone, dioxime
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 501/AS (NCI #C03850).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 501/AS (NCI #C03850).
- Radiation, see Ionizing radiation, Irradiation, Microwave radiation, Nuclear radiation, Radiofrequency radiation
- Radiofrequency radiation
  - Human - workplace exposure - epidemiology...36:39
- Red phosphorus

  - Rat - inhalation...43:9
- Red phosphorous, aerosol
  - Guinea pig - dermal - acute...38:3
  - Mouse - inhalation - acute...38:3
  - Rabbit - dermal - acute...38:3
  - Rat - inhalation - acute...38:3
- Refineries
  - Human - carcinogenicity...43:15
- Reserpine
  - Mouse - diet - 2-year...25:13
  - Rat - diet - 2-year...25:13
- Resorcinol dimethyl ether
  - Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8, 265 (1969)
- Ribotide
  - Rat - oral - 2-year...Toxicology (3), 341 (1975); and Journal of Takeda Research Laboratories (Japan)30, 614 (1971)
- Roccal
  - Rat - oral - 2-year...J. Amer. Pharm. Ass. Sci. Ed. 40, 263 (1951)
- Ronnel
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Roofing asphalt fumes
  - Human - workplace exposure - epidemiology...38:35
- Rosin, disproportionated, fully dimerized, and partially dimerized
  - Rat - oral - 2-year...Naval Stores Review and Terpene Chemicals 74 (12), 4 (1965)
- Rotenone
  - Rat - intraperitoneal - carcinogenicity...40:21
  - Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)
- Rubber solvent
  - Rat - inhalation - gestation...23:21
- Ruelene
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963); Toxicol. Appl. Pharmacol. 7, 491 (1965)
- Saccharin
  - Rat - ingestion - lifetime...16:3
  - Rat - oral - 2-year...J. Am. Pharm. Ass. 40, 583 (1951)
- Safrole, see Dihydrosafrole
- Santicizer 141
  - Rat - oral - 2-year...AMA Arch. Ind. Hyg. Occup. Med. 8, 170 (1953)
- Santicizer 334F
  - Dog - oral - 2-year...Toxicol. Appl. Pharmacol. 26, 58 (1973)
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 26, 58 (1973)
- Santomerse No.3
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 2(6), 641 (1960)
- Selenium
  - Human - epidemiology...43:13
  - Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials, Part II. Pesticides 16(2), 47 (1952)
- Selenium disulfide
  - Mouse - gavage - 2-year...25:15
  - Mouse - skin painting - 2-year...25:15
  - Rat - gavage - 2-year...25:15
- Selsun
  - Mouse - skin painting - 2-year...25:17
- Separan AP30 and Separan NP10
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7(5), 639 (1965)
- Seventy Solvent
  - Human - inhalation - 15-minute...25:9
- Sewage sludge
  - Cow - diet...9:43
- Siduron
  - E. coli - mutagenesis...24:39
  - Human lung culture - mutagenesis...24:39
  - Saccharomyces cerevisiae - mutagenesis...24:39
  - Salmonella typhimurium - mutagenesis...24:39
- Smelter dust
  - Rat - intratracheal injection - 6-month...28:5
- Sodium alginate
  - Rat - oral - 2-year...Proc. Soc. Exp. Biol. Med. 76, 630 (1951)
- Sodium alkylbenzenesulfonate
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 2(4), 464 (1960)
- Sodium arsenate
  - Rat - drinking water - 6-week...17:33
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 10, 132 (1967)
- Sodium arsenite
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 10, 132 (1967)
- Sodium arsenite aerosols
  - Mouse - inhalation - lifetime...19:21
- Sodium bisulfite
  - Rat - oral - 2-year...J. Pharm. 86, 37 (1946)
  - Rat - feed - 10-week...27:35
- Sodium carageenan
  - Rat - diet -3-generation...8:9
- Sodium chromate
  - Rat - oral - 2-year...Food and Drug Administration, unpublished data
- Sodium cyclamate
  - Rat - oral - 2-year...J. Amer. Pharm. Ass. 40, 583 (1951)
- Sodium 2,2-dichloropropionate
  - Rat - oral - 2-year...J. Agr. Food

Chem. 11(6), 468 (1963)
Sodium dichromate
Rat - intratracheal - 3-year...38:3
Sodium dioctyl sulfosuccinate
Rat - oral - 2-year...J. Amer. Pharm. Ass. Sci. Ed.37, 29 (1948)
Sodium 2-ethyl hexyl sulfate, see Tergitol anionic 08
Sodium fluoroacetate
Rat - ingestion - 7-day...14:15
Sodium hexametaphosphate
Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents (1964). Tech. Rep. Ser. Wld. Hlth. Org. 281
Sodium hydroxide, 3%
Rabbit - instilled in eye...2:18
Sodium lauryl glyceryl sulfonate
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(3), 402 (1962)
Sodium lauryl sulfate
Rat - oral - 2-year...J. Amer. Pharm Ass. Sci. Ed.37, 29 (1948)
Sodium lauryl trioxyethylene sulfonate
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(3), 402 (1962)
Sodium metabisulfite
Rat - feed - 10-week...27:37
Rat - oral - 2-year...Food Cosmet. Toxicol. 10(3), 291 (1972)
Sodium monofluoroacetate, see Compound 1080
Sodium nitrate
Rat - gavage - 8-week...27:7
Rat - oral - 2-year...Quarterly Bulletin of the Food and Drug Officials of the U.S. 22, 136 (1958)
Sodium nitrite
Rat - diet -30-month...9:21
Rat - diet - behavioral teratology...40:3
Rat - diet - neurobiological effects...40:3
Sodium 2-(4-styryl-3-sulfophenyl)-2H-naphtho-(1,2-d) triazole
Rat - oral - 2-year...Food Cosmet. Toxicol. 13 (5), 521 (1975)
Sodium beta-sulfopropionamide
Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Sodium tripolyphosphate
Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents (1964).
Tech. Rep. Ser. Wld. Hlth. Org. 281
Solvent Yellow No. 14
Mouse - diet...4:3
Rat - diet...4:3
Sonacide
Mouse - gavage - gestation...31:19
Sonalert (with alarm bells and jet engine noise)
Mouse - whole body - terategenesis...32:23
Sorbic acid
Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org.339 (1962); and Food Cosmet. Toxicol. 13(1),31 (1975)
Sorbitan monopalmitate, see Span 40
Sorbitan monostearate, see Span 60
Sorbitan tristearate, see Span 65
Span 40
Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents. Tech. Rep. Ser. Wld. Hlth. Org. 281. (1964)
Span 60
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3),315 (1959)
Span 65
Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents. Tech. Rep. Ser. Wld. Hlth. Org. 281 (1964)
Stannous chloride
Mouse - diet - 2-year...7:29
Rat - diet - 2-year...7:29
Starch acetate
Rat - oral - 2-year...Food Cosmet. Toxicol. 12 (5/6), 651 (1974)
Steelworkers
Human - workplace exposure - epidemiology...38:29
Stoddard solvent
Human volunteers - inhalation - 15-minute...25:5
Mouse lymphoma cells - mutagenesis...21:11
Rat - inhalation - gestation...20:9, 23:25
Rat bone marrow cells - mutagenesis...21:11
Salmonella typhimurium - mutagenesis...21:11
Yeast - mutagenesis...21:11
Streptomycin sulfate
Rat - injection - 22-day...24:21
Streptozotocin
Dog - intravenous - 46-day...9:3
Dog - intravenous - 50-day...9:3

  Monkey - intravenous - 46-day...9:3
  Monkey - intravenous - 50-day...9:3
  Wasp - diet - mutagenesis...34:39
Strobane
  Rat - oral - 2-year...Summaries of
    Pesticide Toxicity. Association of
    Food Drug Officials of the U.S.,
    Topeka, Kan. (1965)
Styrene
  Dog - gavage - 15-month...8:45
  Human - workplace exposure - epidemiology...36:35
  Rabbit - inhalation...8:43
  Rabbit - inhalation - teratology...12:5
  Rat - drinking water - 2-year...8:45
  Rat - drinking water - 3-generation...8:47
  Rat - gavage...8:43
  Rat - gavage - teratology...12:3
  Rat - inhalation...8:41, 8:43
  Rat - inhalation - 2-year...8:45
  Rat - inhalation - teratology...12:5
  Rat - oral...8:41
Styrene oxide
  DNA synthesis bioassay - mutagenesis...37:9
  Drosophila melanogaster mutagenesis...37:9
  Mouse - gavage - 2-year...31:3
  Mouse - inhalation - mutagenesis...37:9
  Rabbit - inhalation - teratogenesis...37:7
  Rat - gavage - 2-year...31:31
  Rat - inhalation - mutagenesis...37:9
  Rat - inhalation - teratogenesis...37:5
Sucrol, see Dulcin
Sudan I
  Mouse - diet...4:3
  Rat - diet...4:3
Sulfallate
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-286 386/AS
    (NCI #C00453).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-286 386/AS
    (NCI #C00453).
Sulfates
  Mouse - inhalation - 4-month...12:13
  Rat - inhalation - 90-day...10:33
Sulfisonazole
  Mouse - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-288 779/AS
    (NCI #C50022).
  Rat - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-288 779/AS
    (NCI #C50022).
3-Sulfolene
  Mouse - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-284 656/AS
    (NCI #C04557).
  Rat - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-284 656/AS
    (NCI #C04557).
Sulfur dioxide
  Baboon - inhalation - 6-month...12:39
  Guinea pig - inhalation - 6-month...12:39
  Human - inhalation -3-year...13:25
  Mouse - inhalation -3-month...13:17
  Rat - inhalation -30-day...12:11
  Rat - inhalation - 1-year...12:9
Sulfur dioxide, and high/low salt diets
  Rat...39:17
Sulfur dioxide, with smelter dust
  Rat - inhalation and/or intratracheal
    - 6-month...28:5
  Rat - inhalation - 6-month...28:5
  Monkey - inhalation - 1-year...12:9
Sulfuric acid
  Baboon - inhalation - 6-month..12:39
  Donkey - inhalation - 6-month...16:31
  Guinea pig - inhalation - 6-month...12:39
  Human - inhalation - 6-month...13:25
  Mouse - inhalation - 6-month...13:15
  Rat - inhalation - 90-day...10:33
Sulfuric acid mist
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The National Toxicology Program announces the availability of three just released publications --

- NTP Annual Plan for Fiscal Year 1980 (NTP-79-7)
- NTP Review of Current DHEW Research Related to Toxicology (NTP-79-11)
- NTP TECHNICAL BULLETIN

The 1980 NTP Annual Plan contains information on the NTP's research, testing, and validation efforts for the coming fiscal year as well as for the previous fiscal year. This 117-page report divides into ten sections: Introduction and Executive Summary, Back ground, Participating Agencies, Oversight and Review, Planning Assumptions and Program Balance, Organization, Toxicology Research and Testing Overview, Coordinative Management Activities, Information Generation and Dissemination, Annual Report on Carcinogens.

A companion to the NTP Annual Plan is the 334-page NTP Review of Current DHEW Research Related to Toxicology. This compilation emphasizes three major areas: DHEW agencies' Role in the Support of Toxicology Research, Testing, and Method Development: Chemical Compounds Currently Being Tested by DHEW Agencies for Toxicological Properties; Toxicology Methods Currently Being Developed by DHEW Agencies.

The NTP TECHNICAL BULLETIN series will serve as the NTP communication medium to keep all those interested in the NTP informed about the NTP's most current and proposed activities.

For the NTP Annual Plan for Fiscal Year 1980, the NTP Review of Current DHEW Research Related to Toxicology, or the NTP TECHNICAL BULLETIN, please address your request to:

Ms. Leslie Gardner
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

DEAR READER

TOX-TIPS will be carrying announcements of National Toxicology Program (NTP) publications as well as notices of testing projects sponsored by NTP. Please see inside back cover for further details.

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Carol B. Haberman

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TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

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FROM THE EDITOR

Dear Colleague:

TOX-TIPS is in its sixth year of publication. The monthly issues continue to report brief descriptions of testing programs and epidemiology studies to determine the toxicity of chemical substances.

As the format of this first issue of 1982 suggests, greater emphasis is being placed on presenting developments in testing methodologies and requirements to TOX-TIPS readers. Your comments on this coverage are appreciated.

As you know, TOX-TIPS is a project designed primarily to prevent the inadvertent duplication of toxicity testing. Participation by investigators from government, industrial, and academic organizations is necessary if the material published is to describe the current status of testing programs. Blank TOX-TIPS pages are included at the end of each issue and are provided to facilitate submission of brief descriptions of projects as they are initiated. Your participation in the TOX-TIPS program is most welcome. You can obtain additional information by reaching me at 301-496-1131.

Carol B. Haberman

EDITOR, TOX-TIPS

WORLD HEALTH ORGANIZATION
International Agency for Research on Cancer

SHORT COURSE ON STATISTICAL METHODS IN CANCER EPIDEMIOLOGY

IARC, Lyon, France - 19-23 July 1982

The course is intended for statisticians with a background in applied statistics, who are interested in the problem of cancer epidemiology, or epidemiologists who are interested in the quantitative statistical methods now available for analytical epidemiology.

Lectures will be complemented by practical sessions, where exercises based on the methods introduced in the course will be worked using real data examples. All presentations will be accompanied by guidelines to the appropriate statistical software.

THE COURSE WILL COVER:

Alternative measures of risk and their relations to incidence rates
Estimation of risk from different types of study
Design and analysis of case-control studies; relative merits of various designs and implication for the analysis
Matched and unmatched logistic regression
Design and analysis of cohort studies
Proportional hazard model as a general methodology for both case-control and cohort studies
In-depth discussion of problems of bias and of confounding effects

Special emphasis will be placed on regression methods for the analysis of incidence rates and relative risks, and the relationship of these methods to more traditional methods based on standardized ratios and cross tabulations.

THE FACULTY FOR THE COURSE WILL INCLUDE:

N.E. Breslow, Seattle, USA
D. Hémon, Villejuif, France
J. Peto, Oxford, UK
P.G. Smith, London
D. Trichopoulos, Athens
N.E. Day, J. Estève, R. Saracci, J. Wahrendorf, IARC

The working language of the course will be English, and participants will be expected to have a reasonable knowledge of spoken English.

No charge will be made for the course but participants will be expected to find their own support for travel and accommodation. IARC may be able to provide limited financial assistance for accommodation to a selected number of participants.

FURTHER INFORMATION AND APPLICATION FORMS MAY BE OBTAINED FROM:

The Head, Research Training and Liaison Programme, International Agency for Research on Cancer, 150 cours Albert Thomas, 69372 Lyon Cedex 8 - FRANCE.

THE CLOSING DATE FOR RECEIPT OF APPLICATIONS IS 15 APRIL 1982

INTERNATIONAL TOXICITY TESTING GUIDELINES

Norbert P. Page, D.V.M.
National Library of Medicine

Considerable progress has been made in achieving internationally agreed-upon guidelines which are now being utilized on a world-wide basis. These have been developed by the Organization for Economic Cooperation and Development (OECD). In May 1981 the OECD Council formally approved a series of 51 guidelines to test for various effects of chemicals on man and the environment. These have now been published and are available from the OECD (1).

Development of testing guidelines is part of a continuing effort started in 1977 by the Chemicals Programme of the OECD to harmonize regulatory approaches to chemical control, especially in the areas of testing, assessment and information exchange. The goal of having agreed-upon guidelines is to achieve international acceptance of test results, thus reducing duplicative testing which may be necessary to satisfy the requirements of many countries. The guidelines released have been in four areas: physical-chemical properties, degradation - accumulation, ecotoxicity, and toxicology.

The development of OECD guidelines is a rather rigorous process, including initial proposal by at least two OECD member countries, further development by OECD Scientific Expert Groups, national review and comment, revisions by the Expert Groups, formal approval by the Council of the OECD, and finally publication. The published guidelines are now in the process of being utilized by OECD member countries. The OECD consists of 24 countries including those of the European Economic Community (Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Spain and the United Kingdom), plus Australia, Austria, Canada, Finland, Iceland, Japan, New Zealand, Portugal, Norway, Sweden, Switzerland, Turkey and the United States. Yugoslavia participates in a special status. The number of countries in the OECD is less than that of the United Nations or World Health Organization; however, it includes the major chemical producing and exporting countries which account for over 70% of the world production and trade of chemicals and virtually all development of new commercial chemicals.

PHYSICAL/CHEMICAL GUIDELINES

Sixteen guidelines in this category were selected for: (a) mobility, degradation, accumulation, or (b) prerequisite needs or guidance for performing other relevant tests, e.g., water solubility or vapor pressure. Many were subjected to round-robin laboratory intercomparison studies prior to acceptance. The expert group utilized existing guidelines of the American Society for Testing Materials (ASTM), the International Standards Organization (ISO), and those in use in member countries. The tests for physical/chemical properties are generally relatively simple, quick and low-cost.

---

(1) The OECD guidelines are available from: OECD Publications Office, 2, rue Andre-Pascal, 75775 Paris Cedex 16, France, or in the United States from the OECD Publications and Information Center, Suite 1207, 1750 Pennsylvania Avenue, N.W., Washington, D.C. 20006 (phone 202-724-1857).

DEGRADATION/ACCUMULATION GUIDELINES

Fifteen test guidelines in this category are for: ready biodegradablility - 5 tests; inherent biodegradation - 3 tests; biodegradation in soil; a simulation test for aerobic sewage treatment; and bioaccumulation in fish - 5 tests. Most of these tests are also relatively simple and low-cost.

ECOTOXICOLOGY GUIDELINES

Three guidelines were published which involve tests that use algae, Daphnia, and fish to assess for possible ecological effects. Algae is used as a model for effects on plant systems in general. It is a low-cost, easy test to conduct, consisting of adding the test chemical in various concentrations to growing algae cultures with monitoring of growth, post exposure, for 96 hours. Growth retardation is the measured effect. Daphnia, commonly known as the water flea, is a model for effects of chemicals on small organisms. It also is a simple and inexpensive test with various concentrations added to water containing the organism. Lethality, swimming ability, and reproduction are the parameters assessed. An acute toxicity test in fish entails adding various concentrations of test chemical to water containing the fish with lethality measured for at least 96 hours. It is a very flexible guideline with seven species of fish considered acceptable.

TOXICOLOGY GUIDELINES

Seventeen toxicology guidelines for testing of potential human effects have been published by the OECD (Table 1). In addition to the published guidelines, several others are in various stages of development. Table 2 lists those that are currently in draft form and available for review at the Office of International Chemical Affairs, Office of Pesticides and Toxic Substances, Environmental Protection Agency, Washington D.C. 20460. A concerted effort was made to develop guidelines that are sensitive to detect effects but are also cost-effective. In addition, ways were sought to reduce the use of laboratory animals, especially dogs and rabbits. Examples of such cost-saving approaches are: use of limit tests, i.e., preliminary screening or trial tests; exemption from testing based upon results of prior tests or physical/chemical properties; and abbreviated tests. Abbreviated tests were developed where an analysis indicated that a reduction in certain parameters used in previous guidelines, e.g., number of animals, extent of pathology, or shorter duration, would not substantially reduce the reliability of the test. An example of such a cost-saving procedure is the use of 12 months duration for the chronic toxicity test (non-carcinogenicity) rather than 24 months or lifetime as often used in the past. Another example is the exemption from testing for eye irritation when a positive response was obtained from a skin irritation test or when the pH of the material is highly acidic or basic. The rationale is that the probability of eye irritation is extremely high and the compound would be labelled as an irritant or corrosive without testing in the eye. Salient features of the health effects guidelines are presented in Tables 3 - 9.

Table 1. Published OECD Guidelines for Health Effects

Acute Oral Toxicity
Acute Dermal Toxicity
Acute Inhalation Toxicity
Acute Dermal Irritation/Corrosion
Acute Eye Irritation/Corrosion
Skin Sensitisation
Repeated Dose Oral Toxicity - Rodent: 14/28 day
Subchronic Oral Toxicity - Rodent: 90-day
Subchronic Oral Toxicity - Non-Rodent: 90-day
Repeated Dose Dermal Toxicity - 21/28 day
Subchronic Dermal Toxicity - 90-day
Repeated Dose Inhalation Toxicity - 14/28 day
Subchronic Inhalation Toxicity - 90-day
Teratogenicity
Carcinogenicity Studies
Chronic Toxicity Studies
Combined Chronic Toxicity/Carcinogenicity Studies

Table 2. OECD Drafted Guidelines for Health Effects

Acute Delayed Neurotoxicity Study
Subchronic Delayed Neurotoxicity Study
One-generation Reproduction and Fertility Study
Two-generation Reproduction and Fertility Study
Toxicokinetics
Salmonella typhimurium reverse mutation Assay (Ames test)
E. coli WP-2 Reverse Mutation Assay
In vivo Mammalian Bone Marrow Cytogenetics
In vitro Mammalian Cytogenetics
Micronucleus test
In vitro mammalian Cells Gene Mutation Tests
    I. Mouse Lymphoma 15178Y Cells
    II. CHO Cells
    III. V-79 cells
Sex-linked Recessive Lethal Test in Drosophila melanogaster
Rodent Dominant Lethal Test

Table 3. Acute Toxicity Tests (Oral, Dermal, Inhalation)

Species: Oral and Inhalation Tests - Rat preferred

Dermal Test - Rat, Rabbit or Guinea Pig preferred

Number of Animals: 5/sex/dose level

Number of Dose Levels: At least 3, one above 50% lethality and other less than 50% lethality

Dosing: Oral - Single dose or fractionated dose over period of 24 hours or less

Dermal - Single application for 24 hour period

Inhalation - 4 hour exposure

Observation Period: At least 14 days

Clinical Examination: Observations only, no laboratory tests required; weekly body weights

Pathology: Gross examination of those that die or show toxic effects. No microscopic examination.

Limit Tests: Oral - 5000 mg/kg
Dermal - 2000 mg/kg
Inhalation - 5 mg/kg

Table 4. Irritation Tests (Dermal, Eye)

Species: Rabbit preferred

Number of Animals: Minimum 3

Number of Dose Levels: 1

Dosing: Dermal - 0.5 ml or 0.5 gm for 4 hours to 6 cm3 area

Eye - 0.1 mg or 100 mg to one eye, eye lids held together for one second; do not wash for 24 hours; anesthetic can be used if needed

Observation Period: Dermal - Minimum 72 hours (negative); Maximum 14 days to observe for reversibility

Eye - 72 hours

Clinical Examinations: Only examinations of skin or eye required; grading at 1, 24, 48 and 72 hours

Pathology: None required

Table 5. Skin Sensitisation (Seven tests available)

Species: Guinea Pig recommended

Number of Dose Levels: Usually 1

Number of Animals: 6-25

Induction Exposures: 1-20 intradermal or dermal injections usually at frequency of 1-7 days

Challenge Exposures: 1-2 intradermal or dermal exposures 14-35 days after induction period

Evaluation: Examination and gradings up to 72 hours after challenge exposure

Table 6. Repeated Dose and Subchronic Toxicity Tests

	Repeated Dose	Subchronic Test
Species	Oral & Inhalation: Rat preferred	Oral: Rodent (rat) Non-rodent (dog); Inhalation: Rat
	Dermal: Rat, rabbit or guinea pig	
Number of Animals (sex/dose):	5	10
Number of Dose Levels:	3	3
Duration of Exposure/ Observation Period:	14-28 days (Dermal: 21-28 days)	90 days
Frequency of Measurements:		
Body Weight -	Weekly	Weekly
Hematology -	At end	At end
Biochemistry -	NR*	At end
Ophthalmological Exam -	NR	Before & at end
Pathology Examinations:		
Gross Necropsy -	All animals; weigh 4 major organs	All animals; weigh 4 major organs
Tissue Preservation -	5 major organs, gross lesions	All major tissues & gross lesions
		Target organs and gross lesions
		Lungs of all

Limit Test: Oral & Dermal - 1000 mg/kg; none for inhalation

*Not Required

Table 7. Teratogenicity Test

Species:	Rat, mouse, hamster and rabbit (Rat and rabbit preferred)
Number of Animals:	At least 20 pregnant rats, mice or hamsters or 12 pregnant rabbits
Number of Dose Levels:	At least 3 HIGH DOSE - some maternal toxicity but no more than 10% maternal deaths LOW DOSE - no observable effects
Exposure Period:	Period of major organogenesis: rat/mouse - 6-15 days of pregnancy hamster - 6-14 days of pregnancy rabbit - 6-18 days of pregnancy Alternate Method: exposure until 1 day before expected delivery
Clinical Examinations:	Daily clinical examinations Food consumption/body weights weekly
Pathology Examinations:	Shortly before expected delivery - sacrifice; hyserectomy; examine and weigh fetuses Prepare and examine 1/3-1/2 of fetuses for skeletal anomalies; remainder for soft-tissue anomalies

Table 8. Chronic Toxicity Test

Species: Rodent (rat preferred) & Non-rodent (dog preferred)

Number of Animals (sex/dose): 20 - Rodent; 4 - Non-rodent

Number of Dose Levels: 3

Duration of Exposure/Observation Period: 12 months

Frequency of Measurements:

Body Weight -	Weekly - 1st 13 weeks; then monthly
Hematology -	At 3 & 6 months & every 6 months thereafter on 10/sex/dose
Biochemistry -	6 months & at end on 10/sex/dose
Urinalysis -	At 3 & 6 months & every 6 months thereafter on 10/sex/dose

Pathology Examinations:

Gross Necropsy -	All animals; weigh 4 major organs
Tissue Preservation -	All major tissues and gross lesions
Microscopic Exam -	Preserve tissue of high dose & controls plus all animals that die or are killed during study Target organs and lesions Lungs of all

Table 9. Carcinogenicity Study

Species:	Two species - rats and mice preferred
Number of Animals (per sex/dose):	50
Number of Dose Levels:	3
Duration Exposure/ Observations:	Minimum - 18 months for mice & hamsters; 24 months for rats 6 months longer for certain strains Termination Accepted - when low dose or control survival = 25% (on sex basis)

Clinical Examinations:

Body Weight:	Weekly 1st 13 weeks; 3 months thereafter
Food Consumption:	Weekly 1st 13 weeks; monthly thereafter
Hematology:	Differential counts on high dose & controls; other doses if needed

Pathology Examination:

Gross Necropsy:	All animals. No organ weights required
Tissue Preservation:	All major tissues & gross lesions; blood on all animals
Microscopic Exam:	Preserved tissues of: (a) animals that die or are killed (b) lesions suspected of being tumors (c) high dose & controls (d) lower doses if high dose has poor survival (e) target organs of other doses

1982 Hazardous Material Spills Conference

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January 26, 1982

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1982 HAZARDOUS MATERIAL SPILLS CONFERENCE

On April 19-22, the 1982 Hazardous Material Spills Conference will be held in the Milwaukee Exposition and Convention Center, Milwaukee, Wisconsin. This year's conference is sponsored by the Bureau of Explosives of the Association of American Railroads (AAR), the Chemical Manufacturers Association (CMA), the United States Coast Guard, and the United States Environmental Protection Agency (EPA).

Approximately 100 technical papers will be given on subjects including: emergency response capabilities and techniques; methods of assessing the degree of hazard of chemical spills; monitoring and detecting hazardous materials; spill prevention; training and mitigation.

The conference will also feature exhibits on the latest advances in equipment and services.

Superfund legislation and perspectives will be discussed by high ranking officials of the EPA, the CMA, state governments and the AAR during the plenary session, the morning of April 20.

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- Spill Control Association of America

METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

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JOURNAL LITERATURE

Tong, C. et al The use of adult rat liver cultures in the detection of the genotoxicity of various polycyclic aromatic hydrocarbons. *Environ Mutagen 3,* 477-87, 1981.

Two tests which are both short term and *in vitro* are available using adult rat liver cultures. Both tests are able to show an intrinsic ability for xenobiotic biotransformation. Therefore both tests can be used to detect genotoxicity of a variety of polycyclic aromatic compounds which are also carcinogenic. These tests are useful in providing supporting data for that obtained from studies of the effects of the compounds on subcellular metabolism.

Peel, H.W. and Perrigo, B.J. Application of the microcomputer to analytical toxicology. *J Forensic Sci 26*, 362-7, 1981.

This paper on technique of using the microcomputer is worth noting for its suggestions of programming short cuts.

Campbell, R.L. and Bruce, R.D. Comparative dermatotoxicology. Direct comparison of rabbit and human primary skin irritation responses to isopropylmyristate. *Toxicol Appl Pharmacol 59*, 555-63, 1981.

Thompson, E.D. and Hiles, R.A. A method for determining the maximum tolerated dose for *in vivo* cytogenetic analysis. *Food Cosmet Toxicol 19*, 347-51, 1981.

Sin A.K. et al. Effect of hypolipidemic drugs on hepatomegaly and micro-bodies in the rat. A new approach to the nature of hepatic peroxisomal proliferation. *Arzneimittelforsch 31*, 1119-26, 1981.

This paper is of importance because it discusses hepatic changes due to drugs in terms of pharmacological and toxicological criteria as related to hepatic toxic responses to drugs.

Osborne, D. and Effmann, E. Disturbances of trabecular architecture in the upper end of the femur in childhood. *Skeletal Radiol, 6*, 165-73, 1981.

> Data presented in this paper show that the trabecular architecture is an important source of information about effects of toxic substances in childhood.

GOVERNMENT REPORTS

The following items are taken from government reports as shown in the TOXLINE database.

McCauley, P.T. and Bull, R.J. Experimental approaches to evaluating the role of environmental factors in the development of cardiovascular disease. *Govt Reports Announcements & Index (GRA&I)*, Issue 21, 1981.

> For cardiovascular toxicity studies in the laboratory, effects must be studied in the myocardium, the vasculature, and the kidney. In order to take into account the effects of the neuroendocrine system, a further breakdown may be necessary. The authors assume that the effects of toxicants in the environment are essentially chronic in nature and that studies should focus on chronic effects. They point out that a wide range of tests, both *in vivo* and *in vitro*, may be necessary to obtain data that can be extrapolated to man. Also they note that if genetically susceptible or stressed animals are used, their physiological characteristics must be understood.

Arthur, J.U. Review of freshwater bioassay procedures for selected amphipods. *Govt Reports Announcements & Index (GRA&I)*, Issue 21, 1981.

> This report reviews the methods previously used for gammarid bioassays and the life-cycle requirements. Although the data discussed deals largely with amphipod materials from tests on amphipods, data on other fresh water crustaceans are also considered. Short term

test factors discussed were survival rate, acclimation period, test chamber size, and age of the amphipods. For long term tests, survival rate, isolation of gravid females, sex ratios during reproductive testing, and test duration were considered. The utility of flow-through methods was also emphasized.

Infante, P.F. and Legator, M.S. Proceedings of workshop on methodology for assessing reproductive hazards in the workplace, April 19-22, 1978. *Govt Reports Announcements & Index (GRA&I)*, Issue 23, 1981.

Research topics discussed included case studies, test procedures both *in vitro* and *in vivo* for mutagens or teratogens, cytogenic and sperm analysis for exposed workers as well as epidemiological techniques for determining teratogens. Recommendations relating to such studies are included as well as names and addresses of study participants.

Shooter, D., and Anderson, R.C. Research and development for health and environmental hazard assessment. *Govt Reports Announcements & Index (GRA&I)*, Issue 21, 1981.

This research project deals with the problem of water quality for non-potable reuse. Two groups of water quality criteria must be considered. One is the determination of the daily allowable dose of a given contaminant which will produce no adverse effects on health. The other is the estimation of the minimum concentration in the water which would allow the subject to assimilate no more than the daily allowable dose.

RESEARCH-IN-PROGRESS

The following citations are taken from the reports of research in progress as appearing in TOXICOLOGY RESEARCH PROJECTS DIRECTORY, a component of the TOXLINE database from which complete descriptions and additional information are available.

Eaton, J.G. Hazard evaluation. *Toxicology Research Projects Directory*, Vol 07, Issue 01, 1981.

This project is expected to evaluate the toxicity of pesticide compounds to aquatic life both vertebrate and invertebrate. Flowing-water bioassays will be used with known concentrations of the toxic substances. State of the art test procedures will be used throughout.

Santi, L. et al. Chemical carcinogens studies-transplacental carcinogens and applications of short-term tests to environmental pollutants. *Toxicology Research Projects Directory*, Vol 07, Issue 01, 1981.

This research project has a three-fold aim. The first is the study of the possibility that compounds given to the pregnant mouse may cause tumor development in the young as they age. The second is to study the "toxicity and onconogenic potency of compounds intermediate in chemical processes or utilized in the industrial environment". The third approach is to find a change in the blood of smokers as compared with non-smokers which will permit the early identification and warning of smokers. The change under investigation at present is the increase in SCE in smokers.

Russell, W.L. Mammalian chemical mutagenesis. *Toxicology Research Projects Directory*, Vol 07, Issue 01, 1981

This comprehensive mouse mutagenesis program is planned to study the genetic effects of compounds from non-nuclear energy production, mainly coal. Three main types of test are used: 1) tests for transmitted chromosomal aberrations and for transmitted gene mutations; 2) dominant lethal test as well as the tests for heritable translocations and the X-chromosome-loss test as developed by this project; and 3) tests to assist in the evaluation of the mutagenesis work. These latter tests include toxicity tests, fate and metabolism, reproductive tests, etc.

Colwell, R.R. and Baya, A.M. Effect of toxic chemicals on human pathogens in the aquatic environment. *Toxicology Research Projects Directory,* Vol 07, Issue 01, 1981.

> This study is expected to develop methods of predicting the effects of toxic materials in an aquatic environment upon human pathogens and to describe the fundamental basis of action of such chemicals. Very little information applicable to this question is now available.

Keeler, R.F. Teratogenic and poison plant compounds from poison plants. *Toxicology Research Projects Directory,* Vol 07, Issue 01, 1981.

> Teratogenic and toxic compounds will be extracted from Verarum, Lupinus, Conium, Nocotaina and phylogenetically related species. These plants are all of interest in livestock grazing.

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Contract No: NTP No. 10241-F
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PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Acetaldehyde

INVESTIGATOR(S):
For further information, contact
Technical Information Section

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National Toxicology Program
Landow Building, 3A06
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PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

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The acetaldehyde study has been placed in the deferred testing category because of recently completed inhalation and intratracheal studies in hamsters at Central Institute for Nutrition and Food in The Netherlands.

CAS Registry No.
Acetaldehyde 75-07-0

TOX-TIPS JANUARY 1982 68-19

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Effect of acetaldehyde on lung surfactant
Indian J. Exp. Biol.; VOL 19, ISS 6, 1981,580-1

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Lumeng L
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PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Cadmium Oxide

INVESTIGATOR(S):
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The cadmium oxide study has been placed in the deferred testing category because carcinogenesis studies are in progress or have been published.

CAS Registry No.
Cadmium oxide 1306-19-0

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SYMPOSIUM ON DETERMINANTS OF CANCER RELEVANT TO PREVENTION IN THE WAR ON CANCER. J ENVIRON PATHOL TOXICOL: 3 (4) 1980 431-450.

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Industrial testing of the apparatus MSTs-II in dust removal system of cadmium oxide production
Khim. Prom-st., Ser.: Fosfornaya Prom-st.; ISS 4, 1979,24-7

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PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Cadmium Sulfide

INVESTIGATOR(S):

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The cadmium sulfide study has been placed in the deferred testing category because carcinogenesis studies are in progress or have been published.

CAS Registry No.
Cadmium sulfide 1306-23-6

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INT AGENCY RES CANCER
WHO INTERNATIONAL AGENCY FOR RESEARCH ON CANCER MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS VOL. 1-20 SUPPLEMENT 1. CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS LYON FRANCE JAN. 15-17 1979
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NOTICE OF RESEARCH PROJECT

TOX-TIPS

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NTP No. 10287-K
and/or
Control No: NCI No. C61109

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of C.I. Direct Blue 1

INVESTIGATOR(S):

For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Plans to test C.I. Direct Blue 1 in the NTP Carcinogenesis Testing Program have been dropped. C.I. Direct Blue 15, paired with 3,3'-dimethoxybenzidine has been substituted. (See TOX-TIPS JANUARY 1982 68-27.)

CAS Registry No.

C.I. Direct Blue 1	2610-05-1
C.I. Direct Blue 15	2429-74-5
3,3'-Dimethoxybenzidine	119-90-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

LYNN RK ; DONIELSON DW ; ILIAS AM ; KENNISH JM ; WONG K
MATTHEWS HB
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WILSON JG
TERATOGENIC ACTIVITY OF SEVERAL AZO DYES CHEMICALLY RELATED TO TRYPAN BLUE
ANAT REC; 123:313-334,1955

BEAUDOIN AR
TERATOGENIC ACTIVITY OF SIX DISAZO DYES IN THE WISTAR ALBINO RAT
PROC SOC EXP BIOL MED; 127:215-219,1968

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WILSON JG
CONGENITAL MALFORMATIONS IN THE OFFSPRING OF RATS TREATED DURING PREGNANCY WITH AZO DYES
ANAT REC; 118:369,1954

NOTICE OF RESEARCH PROJECT
TOX-TIPS

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SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or NTP No. 10701-A
Control No: NCI No. C61290

PROJECT TITLE:

Carcinogenesis Bioassay of C.I. Direct Blue 15

INVESTIGATOR(S):

Dr. J. Mennear

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
Hazelton Laboratories
9200 Leesburg Turnpike
Vienna, VA 22180

PERIOD FOR THIS NRP:

Start Date: SEPTEMBER 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, C.I. Direct Blue 15 will be administered to rats via the drinking water.

CAS Registry No.
C.I. Direct Blue 15 2429-74-5

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

LYNN RK ; DONIELSON DW ; ILIAS AM ; KENNISH JM ; WONG K
MATTHEWS HB
Metabolism of bisazobiphenyl dyes derived from benzidine, 3,3'-dimethylbenzidine or 3,3'-dimethoxybenzidine to carcinogenic aromatic amines in the dog and rat.
TOXICOL APPL PHARMACOL; 56 (2). 1980. 248-258.

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WILSON JG
CONGENITAL MALFORMATIONS IN THE OFFSPRING OF RATS TREATED DURING PREGNANCY WITH AZO DYES
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ADV TERATOL; 1:131-193,1966

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TERATOGENIC ACTIVITY OF SEVERAL CLOSELY RELATED DISAZO DYES ON THE DEVELOPING CHICK EMBRYO
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BEAUDOIN AR ; PICKERING MJ
TERATOGENIC ACTIVITY OF SEVERAL SYNTHETIC COMPOUNDS STRUCTURALLY RELATED TO TRYPAN BLUE
ANAT REC; 137:297-305,1960

WILSON JG
TERATOGENIC ACTIVITY OF SEVERAL AZO DYES CHEMICALLY RELATED TO TRYPAN BLUE
ANAT REC; 123:313-334,1955

BEAUDOIN AR
TERATOGENIC ACTIVITY OF SIX DISAZO DYES IN THE WISTAR ALBINO RAT
PROC SOC EXP BIOL MED; 127:215-219,1968

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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10158-K
and/or
Control No: NCI No. C60582

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Polyvinylpyrrolidine Polymers

INVESTIGATOR(S):
For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Plans to test polyvinylpyrrolidine polymers in the NTP Carcinogenesis Testing Program have been dropped. It has been decided that adequate toxicity testing data exists in the literature.

CAS Registry No.
1-Vinyl-2-pyrrolidinone
polymers 9003-39-8

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

INT AGENCY RES CANCER
INTERNATIONAL AGENCY FOR RESEARCH ON CANCER MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS VOL. 19. SOME MONOMERS PLASTICS AND SYNTHETIC ELASTOMERS AND ACROLEIN LYONS FRANCE FEB. 7-13 1978
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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10239-E
and/or
Control No: NCI No. C61176

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Sodium Arsanilate

INVESTIGATOR(S):

For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Plans to test sodium arsanilate in the NTP Carcinogenesis Testing Program have been dropped. The compound is structurally related to Roxarsone, which is already being tested. (See TOX-TIPS APRIL 1981 59-9)

CAS Registry No.
Sodium arsanilate 127-85-5

TOX-TIPS JANUARY 1982 68-31

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Delayed elimination of the ototoxic compound atoxyl from the inner ear
Arch. Oto-Rhino-Laryngol.; VOL 215, ISS 1, 1977,81-9

NOTICE OF RESEARCH PROJECT

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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10303-W
and/or
Control No: NCI No. C61187

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of 2,4,5-Trichlorophenol

INVESTIGATOR(S):
For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address,
Including Zip Code.

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

2,4,5-Trichlorophenol has been deleted from study plans. The compound is no longer produced and a major contaminant is a known carcinogen.

CAS Registry No.
2,4,5-Trichlorophenol 95-95-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NOTICE OF RESEARCH PROJECT

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10180-D
and/or
Control No: NCI No. C60208

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Vinylidene Fluoride

INVESTIGATOR(S):

For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Vinylidene fluoride has been nominated to NTP for testing. The project has been delayed pending results from an industry-sponsored rat study.

CAS Registry No.
Vinylidene fluoride 75-38-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

Performing Organization

Enter name of organization where work is actually being done.

Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

Project Summary

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

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National Library of Medicine
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SUPPORTING ORGANIZATION NUMBER(S):

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INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

Before completing this form, please see reverse side for instructions.

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Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

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Performing Organization

Enter name of organization where work is actually being done.

Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

Project Summary

Please include as a *minimum* the following information:

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2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
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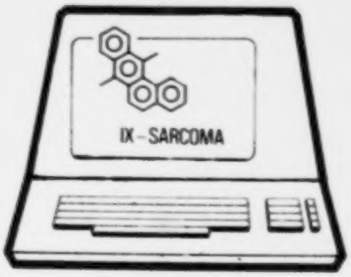

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Bethesda, Maryland 20209

TDB DEFINED

The Toxicology Data Bank (TDB) is an online, interactive file containing chemical, pharmacological, and toxicological data extracted from textbooks, handbooks, criteria documents, and monographs. The file is prepared at the National Library of Medicine (NLM) and made available through its online service, the Medical Literature Analysis and Retrieval System (MEDLARS). TDB contains data and information on about 2,500 substances, plus notices that more than 750 additional substances are in the process of data extraction. Thus, over 3000 substances are in the public TDB file. Data in TDB have been reviewed by a peer group of scientists.

Information in TDB is organized around each chemical substance with records composed of approximately 60 different data elements. The elements are grouped into eight categories which include chemical, physical, biological, pharmacological, toxicological, and environmental information.

TDB ACCESSED

TDB is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

TDB SEARCHED

TDB is primarily searched using free text terms. The human and animal/non-human toxicity excerpts have been indexed with TOXMeSH vocabulary. The user can search TDB for a particular chemical record by entering the TDB number, CAS Registry Number, or a chemical name. The user can also search TDB for information on a group of compounds, or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected information reported for a given substance.

TDB AVAILABILITY

TDB is available at NLM Monday, Wednesday, and Thursday from 3:00 a.m. to 8:00 p.m., and Tuesday and Friday 3:00 a.m. to 9:00 p.m. and Saturday from 8:30 a.m. to 9:00 p.m. (Eastern Time).

TDB COST

The cost of access to the TDB file is $22 per hour during prime time (10:00 a.m. to 5:00 p.m.), and $15 per hour at non-prime times. There is a charge of $0.15 per page for offline printout (effective October 1, 1981).

TDB USER SERVICES

For Online Systems services including access to the TDB file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone (301) 496-6193

For TDB content, including search strategies, contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone (301) 496-1131

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

INSIDE

SHORT COURSE ON STATISTICAL METHODS IN CANCER EPIDEMIOLOGY

IARC (International Agency for Research on Cancer)
Lyon, France 19-23 July 1982
See page 4 for full details

1982 HAZARDOUS MATERIALS SPILLS CONFERENCE

Milwaukee, Wisconsin 19-22 April 1982
See page 12 for full details

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TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

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TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

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FROM THE EDITOR

Dear Colleague:

The Toxicology Information Program (TIP) in the Specialized Information Services (SIS) division of the National Library of Medicine (NLM) is responsible for the provision of four online files under the Library's MEDLARS system. From time to time, abridged information sheets concerning

CHEMLINE, TOXLINE, RTECS, TOXICOLOGY DATA BANK

have been published in TOX-TIPS. These databases constitute the NLM chemical and toxicological files.

As you may have noticed, these information sheets have been revised recently. This is not the only change that has occurred in the SIS user-support products.

There are now three types of user-aids available for the NLM Chemical and Toxicological Databases; these are the user-guides, pocket cards, and information sheets.

Regular users of SIS files received a copy of the user guides last fall. These guides are also provided to all those receiving training at NLM in the use of MEDLARS. Additional copies of the user guides may be purchased from NTIS for $30 each set. See inside cover for the address from which the document can be ordered. Please cite product number PB82-143215.

Information sheets and pocket cards can be obtained from the Toxicology Information Program upon request. Questions about the National Library of Medicine's activities in toxicology information and related areas will also be welcomed.

EDITOR, TOX-TIPS

TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

ORGANIZATION—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

PERSONNEL—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

INFORMATION RESOURCES—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

SEARCH REQUEST INFORMATION—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

SEARCH COMPLETION TIME—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

INFORMATION SERVICES—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NCI No. C56586
and/or
Control No: NTP No. 10268-Y

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Ochratoxin A

INVESTIGATOR(S):
Chemical Manager:

Dr. W. Eastin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code. Battelle Columbus Laboratory
Columbus, OH 43201

PERIOD FOR THIS NRP:
Start Date: June 1979
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program Executive Committee selected 28 chemicals for extensive toxicological characterization. One of these, Ochratoxin A, is already on test. Prechronic testing began April 1981, and chronic testing is expected to begin in late 1982. The chemical is being administered to rats by gavage.

CAS Registry No.
Ochratoxin A 303-47-9

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The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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POULT SCI; 60 (6). 1981. 1145-1148.

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10046-P
and/or
Control No: NCI No. C52904B

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Naphthalene

INVESTIGATOR(S):
Chemical Manager:

Dr. S. Brown

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program Executive Committee selected 28 chemicals for extensive toxicological characterization. One of these, naphthalene, was tested previously through the prechronic phase. It is now committed to a two-year bioassay.

CAS Registry No.
Naphthalene 91-20-3

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BR J CANCER; 37:924-930,1978

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SUPPORTING ORGANIZATION NUMBER(S)
Contract No: NTP No. 10244-8
and/or
Control No: NCI No. C60844

PROJECT TITLE:
NTP Toxicological Testing Program: Status of 2-Bromo-4,6-Dinitroaniline

INVESTIGATOR(S):
Chemical Manager:

Dr. K. Chu

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is 2-bromo-4,6-dinitroaniline.

CAS Registry No.
2-Bromo-4,6-dinitroaniline 1817-73-8 TOX-TIPS FEBRUARY 1982 69-9

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Dreikorn BA
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Braz. Pedido PI PATENT NO. 79 00462 08/21/79 (Lilly, Eli, and Co.)

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SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10245-W
and/or
Control No: NCI No. C60855

PROJECT TITLE:
NTP Toxicological Testing Program: Status of β-Bromo-β-Nitrostyrene

INVESTIGATOR(S):
Chemical Manager:

Dr. H. Weber

Contact:
DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is beta-bromo-beta-nitrostyrene.

CAS Registry No.
beta-Bromo-beta-nitrostyrene 7166-19-0

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SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10221-P
and/or
Control No: NCI No. C61381

PROJECT TITLE:

NTP Toxicological Testing Program: Status of Cadmium Nitrate

INVESTIGATOR(S):

Chemical Manager:

Dr. J. Dunnick

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:
Start Date: -
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is cadmium nitrate.

CAS Registry No.
Cadmium nitrate 10325-94-7

TOX-TIPS FEBRUARY 1982 69-13

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Z. Wasser Abwasser Forsch.; VOL 11, ISS 5, 1978,161-4

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Z. Wasser Abwasser Forsch.; VOL 10, ISS 5, 1977,161-6

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Z. Wasser Abwasser Forsch.; VOL 10, ISS 3-4, 1977,87-93

KADA T ; HIRANO K ; SHIRASU Y
SCREENING OF ENVIRONMENTAL CHEMICAL MUTAGENS BY THE REC-ASSAY SYSTEM WITH BACILLUS SUBTILIS
CHEM MUTAGENS:PRIN METHODS THEIR DETECTION; 6:149-173,1980

NOTICE OF RESEARCH PROJECT

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Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No.
and/or
Control No: NCI No.

PROJECT TITLE:
NTP Toxicological Testing Program: Status of C.I. Direct Yellow 11

INVESTIGATOR(S):
Chemical Manager:

Dr. W. Eastin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental
Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 29909

PERIOD FOR THIS NRP:
Start Date: -
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is C.I. Direct Yellow 11.

CAS Registry No.
C.I. Direct Yellow 11 1325-37-7

TOX-TIPS FEBRUARY 1982 69-15

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Hof CR ; Ulin RA
Temperature indicating compositions of matter
U.S. PATENT NO. 4232552 11/11/80 (Akzona, Inc.)

NOTICE OF RESEARCH PROJECT
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Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: NCI No. C61392

PROJECT TITLE:
NTP Toxicological Testing Program: Status of C.I. Vat Blue 1

INVESTIGATOR(S):
Chemical Manager:

Dr. J. Mennear

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute of Environmental
Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is C.I. Vat Blue 1.

CAS Registry No.
C.I. Vat Blue 1 482-89-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Fed. Regist.; VOL 42, ISS 239, 1977,62471-2

Anon
Provisional listing of D&C Blue No. 6; termination of closing date
Fed. Regist.; VOL 42, ISS 239, 1977,62473-4

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10213-P
and/or
Control No: NCI No. C60742

PROJECT TITLE:
NTP Toxicological Testing Program: Status of 1,8-dihydroxy-4,5-Dinitroanthraquinone

INVESTIGATOR(S):
Chemical Manager:

Dr. R. Irwin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is 1,8-dihydroxy-4,5-dinitroanthraquinone.

CAS Registry No.
1,8-Dihydroxy-4,5-dinitroanthraquinone 81-55-0

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POLYMERASE-DEFICIENT ESCHERICHIA COLI
CHEM MUTAGENS:PRIN METHODS THEIR DETECTION; 6:109-147,1980
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NOTICE OF RESEARCH PROJECT

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10018-Y
and/or
Control No: NCI No. C56393

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Ethylbenzene

INVESTIGATOR(S):
Chemical Manager:

Dr. H. Plotnick

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute for Occupational Safety and Health
Taft Laboratories C22
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is ethylbenzene.

CAS Registry No.
Ethylbenzene 100-41-4

TOX-TIPS FEBRUARY 1982 69-21

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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HUMAN EXPOSURE TO WATER POLLUTANTS
SUFFET, IRWIN H. (ED.). ADVANCES IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY VOL. 8. FATE OF POLLUTANTS IN THE AIR AND WATER ENVIRONMENTS. PART 2. CHEMICAL AND BIOLOGICAL FATE OF POLLUTANTS IN THE ENVIRONMENT. SYMPOSIUM AT THE 165TH NATIONAL AMERICAN CHEMICAL SOCIETY MEETING IN THE ENVIRONMENTAL CHEMISTRY DIVISION. PHILADELPHIA, PA., USA, APRIL 1975. XX+442P. ILLUS. MAPS. JOHN WILEY & SONS, INC.: NEW YORK, N.Y., USA. ISBN 0-471-83539-0(PART 1); ISBN 0-471-01803-1(PART 2).; 1977 (RECD 1978) 419-433

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NOTICE OF RESEARCH PROJECT

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Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10189-N
and/or
Control No: NCI No. C60571

PROJECT TITLE:
NTP Toxicological Testing Program: Status of n-Hexane

INVESTIGATOR(S):
Chemical Manager:

Dr. J. Dunnick

Contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute of Environmental
Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is n-hexane.

CAS Registry No.
n-Hexane 110-54-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Rev Clin Esp; VOL 161, ISS 4, 1981, P257-8

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Teratog., Carcinog., Mutagen.; VOL 1, ISS 4, 1981,345-51

Nishiuchi Y
Toxicity of pesticides to some aquatic animals. II. Toxicity of several solvents to carp and Daphnia
Seitai Kagaku; VOL 4, ISS 3, 1981,45-7

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10261-W
and/or
Control No: NCI No. C60968

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Isobutyraldehyde

INVESTIGATOR(S):
Chemical Manager:

Dr. J. McCoy

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:
Start Date: -
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is isobutyraldehyde.

CAS Registry No.
Isobutyraldehyde 78-84-2

TOX-TIPS FEBRUARY 1982 69-25

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BIOCHIM BIOPHYS ACTA; 518:177-180,1978

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MUTAT RES; 39 (3-4). 1977 317-362

Obe G ; Beek B
Mutagenic activity of aldehydes
Drug Alcohol Depend.; VOL 4, ISS 1-2, 1979,91-4

SASAKI Y ; ENDO R
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MUTAT RES; 54 (2). 1978 251-252

KOPFLER FC ; MELTON RG
HUMAN EXPOSURE TO WATER POLLUTANTS
SUFFET, IRWIN H. (ED.). ADVANCES IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY VOL. 8. FATE OF POLLUTANTS IN THE AIR AND WATER ENVIRONMENTS. PART 2. CHEMICAL AND BIOLOGICAL FATE OF POLLUTANTS IN THE ENVIRONMENT. SYMPOSIUM AT THE 165TH NATIONAL AMERICAN CHEMICAL SOCIETY MEETING IN THE ENVIRONMENTAL CHEMISTRY DIVISION. PHILADELPHIA, PA., USA, APRIL 1975. XX+442P. ILLUS. MAPS. JOHN WILEY & SONS, INC.: NEW YORK, N.Y., USA. ISBN 0-471-83539-0(PART 1); ISBN 0-471-01803-1(PART 2).; 1977 (RECD 1978) 419-433

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10264-H
and/or
Control No: NCI No. C60980

PROJECT TITLE:
NTP Toxicological Testing Program: Status of 2-Mercaptobenzimidazole

INVESTIGATOR(S):
Chemical Manager:

Dr. J. Quest

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, Room 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is 2-mercaptobenzimidazole.

CAS Registry No.
2-Mercaptobenzimidazole 583-39-1

TOX-TIPS FEBRUARY 1982 69-27

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Bell SC ; Wei PH L
Syntheses of heterocyclic fused thiazole acetic acids. 2
J. Med. Chem.; VOL 19, ISS 4, 1976,524-30

BARILYAK IR
EMBRYOTOXIC AND MUTAGENIC EFFECT OF 2-MERCAPTO-BENZIMIDAZOLE
FIZIOL AKT VESHCHESTVA; 6:85-88,1974

Berntsson PB ; Carlsson SA I ; Garberg LE ; Junggren UK
Sjostrand SE ; Von Wittken Sundell GW
Agents affecting the secretion of gastric acid
Belg. PATENT NO. 834973 02/16/76 (Aktiebolag Hassle)

BARILYAK IR ; RATSKAYA GV ; MEL'NIK EK
IMMUNOLOGICAL INVESTIGATIONS IN THE PRESENCE OF CONGENITAL
CHROMOSOMAL PATHOLOGY(CLINICO-EXPERIMENTAL DATA)
CYTOL GENET(ENGL ED); 13:58-63,1979
(TRANSLATED FROM TSITOLOGIYA I GENETIKA 13:64-69,1979)

BARILYAK IR ; RUTSKAYA GV ; MEL'NIK EK
CERTAIN IMMUNOLOGICAL STUDIES IN INBORN CHROMOSOMAL
PATHOLOGY(CLINICO-EXPERIMENTAL DATA)
TSITOL GENET; 13:64-69,1979

RUDDICK JA ; NEWSOME WH ; NASH L
CORRELATION OF TERATOGENICITY AND MOLECULAR
STRUCTURE:ETHYLENETHIOUREA AND RELATED COMPOUNDS
TERATOLOGY; 13:263-266,1976

BARILYAK IR
EFFECT OF HYDROLASE ENZYMES OF THE LYSOSOMES ON RAT EMBRYOS
SOV J DEV BIOL(ENGL TRANSL ONTOGENEZ); 8:451-455,1977
(TRANSLATED FROM ONTOGENEZ 8:521-524,1977)

BARILYAK IR
RELATION BETWEEN EMBRYONIC CELL MITOTIC ACTIVITY AND THE
INJURIOUS EFFECT OF SOME AGENTS ON EMBRYOGENESIS
FIZIOL AKT VESHCHESTVA; 8:106-108,1976

BARILYAK IR ; BELOUSOVA AA
INFLUENCE OF SOME CHEMICAL TERATOGENIC SUBSTANCES ON THE
EMBRYOGENESIS OF THE HEARING ORGAN
ZH USHN NOS GORL BOLEZN; 35:18-22,1975

METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

STUDYING TOXIC RESPONSES IN FETAL AND YOUNG ANIMALS

The field of pre and postnatal toxicity and the methods used to study toxic responses in fetal and young animals are rapidly developing. Neurobehavioral toxicology in young animals following the administration of toxic agents to the mother during gestation is becoming more clearly defined and understood. The following items are chosen to illustrate the current state of the art in this field.

Nelson, B.K. Dose/effect relationships in developmental neurotoxicology [editorial]
Neurobehav Toxicol Teratol 3,355, 1981.

Wolkowski-Tyl, R. Reproductive and teratogenic effects: no more thalidomides?
ACS Symp SER 160(CH08): 115-155, 1981.

Teratology is defined and the history of the field is outlined. Both human and animal teratology and teratological agents are discussed. Tests and procedures are reviewed and new ones are described and analyzed. The extrapolation of animal data to human situations is considered. "Teratogenic susceptibility is thought to depend on the specificity and disposition of the agent and the specificity of the target."

Reinhardt, D. and Richter, O. Drug effects on embryo and fetus. 2. Diaplacental transport of drugs.
Fortschr Med 99, 1384-8, 1981.

Seldom is treatment of the unborn child the purpose of the administration of drugs to the mother. No direct relationship appears to exist between the chemical structure, the pharmacological activity, or the toxicity of a drug as judged by its effect on the adult and the effect it may have on the fetus. At present, assessment of the toxicity or teratogenicity of a drug depends upon evaluation of the type of drug, the developmental status of the embryo at the time of administration, and the access which the drug gains to the conceptus. The individual susceptibility of the individual and the final disposition of the drug are also of importance. The authors demonstrate and discuss the pharmokinetics of diaplacental drug transfer.

Pedersen, R.A. Embryo cultures and environmental toxicity.
Toxicological Research Projects Directory, vol 7 issue 02, 1982.

Embryos cultured from the 2 egg stage to the egg cylinder state will be used because they form the three primary germ layers and have the morphology and ultrastructure of embryos developing in utero. The patterns of protein synthesis will be followed using two dimensional chromatography. These tests will provide the normal bases against which the effects of chemical substances or of radiation can be judged.

Vorhees, C.V. et al. Developmental neurobehavioral toxicity of butylated hydroxyanisole (BHA) in rats.
Neurobehav Toxicol Teratol 3, 321-9, 1981.

> This paper describes the techniques developed by these authors who have pioneered in the field to study the neurobehavioral effects of a compound. They note "... that BHA is not a potent behavioral toxin although it is developmentally toxic using non-behavioral measures."

Gryder, R.M. and Frankos, V.H. editors. Effects of foods and drugs on the development and function of the nervous system: Methods for predicting toxicity
Proc Fifth FDA Science Symposium, Oct 10-12, 1979. Available from the Office of Health Affairs, FDA.

> This important symposium dealt with neurobehavioral development and maintenance, methods for assessing neurotoxicity, current status of neurotoxicity screening procedures, current issues in neurotoxicity and suggested future directions for detection of neurotoxicity. The sessions included oral presentations and a poster session.

RESEARCH-IN-PROGRESS

The following citations are taken from reports of research-in-progress as appearing in TOXICOLOGY RESEARCH PROJECTS DIRECTORY, a component of the TOXLINE database from which complete descriptions and additional information are available.
See also Pedersen, R.A. above.

Miller, R.W. et al. Discovery and development of methods for control of insects affecting livestock.
Toxicology Research Projects Directory, vol 7, issue 02, 1982.

> This research, although dealing principally with problems of insect control, does also consider the problems of assessing the values of various types of insecticides and therefore would be of interest to those testing such toxic agents.

Edwards, M.S. et al. Radiation sensitized neurotoxicity.
Toxicology Research Projects Directory, vol 7, issue 02, 1982.

> This research, although planned to study two hypoxic cell radiosensitizers, will evaluate the efficacy of electrophysiological tests as a measure of neurotoxicity. Patients with CNS tumors who are undergoing radiation therapy with and without the use of a radiosensitizer will be studied. The tests used include nerve train analysis, brain stem and cortical evoked potentials. Attempts will also be made to modify the neurotoxicity by the administration of additional drugs.

JOURNAL LITERATURE

Antozak, K. and Wilozynska, U. [Selection of a statistical model for the evaluation of the reliability of the results of toxicological analyses. II. Selection of our statistical model for the evaluation]
Med Pr 31, 453-7, 1980.

> The model presented by the authors includes a reference value based on their measurements using two independent analytical methods and data from laboratories selected on the basis of the deviation of their data from the reference values. "..Subsequent quality controls and particular laboratories have been evaluated.." based on statistical evaluation of the data using variance analysis, t-student's test and difference test.

Lindsay, R.M. et al. Platelet function as an assay for uremic toxins.
Artif Organs 4 Suppl 82-9, 1981.

The authors have developed an *in vitro* platelet system sensitive to drugs as well as to uremic toxins. They suggest that the platelet preparation could be useful to study the toxicity of "middle molecules.." in a biological system. Their experiments illustrate the usefulness of such a system and point out some of the problems encountered and the need for "...careful controls..."

Andersen, M.E. Saturable metabolism and its relationship to toxicity.
CRC Crit Rev Toxicol 9, 105-50, 1981.

This paper discusses the central role played by metabolic processes in the toxicity of drugs. A drug may be metabolized to a less effective form, or an ineffective drug may be changed to a more toxic one. The ease and form in which a substance is excreted also are important in determining its effective form and the length of time it remains in the body. The metabolism and excretion of drugs is almost entirely dependent upon enzymes and carrier proteins, i.e., specific binding proteins. These pathways can become saturated at sufficiently high substrate or drug concentrations. "Development of comprehensive pharmacokinetic descriptions of the influence of saturable clearance on delivery of active chemical to target sites augers well for improving both intraspecies and interspecies extrapolation of toxicity data." The author concludes that much work remains to be done in this rewarding area.

GOVERNMENT REPORTS

Bioassay Guideline 1: General guidelines for bioassay programs. Report of the Working Group on Bioassay and *in vivo* Monitoring

Criteria to the Federal-Provincial Advisory Committee on Environmental and Occupational Health. Published by Authority of the Minister of National Health and Welfare, January, 1980. Copies of this report may be obtained from: Information Directorate, Department of National Health and Welfare, 5th floor, Brooke Claxton Building, Ottawa, KIA OK9. Cite Report No. 81-EHD-56

Thompson, C.R. et al. Development of a protocol for testing effects of toxic substances on plants.
Report; ISS EPA-600/3-81-006; Order No. PB81-157901, 1981.

> The effects of toxic substances in the environment upon plants can be measured by the bioassay procedures described in this report. To test the method, eight different plant species were treated with seven compounds. The reproducibility of the method was checked by two successive runs with the same compound.

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*Project Officer/Compound Manager

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The Toxicology Information Program was established at the National Library of Medicine (NLM) in 1967 in response to recommendations made in the 1966 report, "Handling of Toxicological Information", prepared by the President's Science Advisory Committee. The general objectives of TIP are: (1) the creation of computerized toxicology data bases from the scientific literature and from the files of collaborating industries, academic institutions, and government agencies; and (2) the provision of toxicology information products and services to the scientific community. These services consist of a variety of online information retrieval services, query response services, and several publications.

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TIP maintains several online, interactive retrieval services in toxicology which may be accessed via terminals connected (through telephone networks) to the NLM computer. These services are available Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 5:00 P.M. (Eastern Time). Prime time, defined at 10:00 A.M. to 5:00 P.M., is more expensive than non-prime time.

TIP QUERY RESPONSE

The Toxicology Information Response Center (TIRC), sponsored by TIP at the Oak Ridge National Laboratory, performs literature searches for a service fee of $35/hour. Search requests should be addressed to: Director, TIRC, Oak Ridge National Laboratory, P.O. Box X, Bldg. 2024, Oak Ridge, TN 37830; telephone 615/576–1743 or FTS 626–1743.

TIP PUBLICATIONS

TIRC also prepares specialized, annotated bibliographies on current topics in toxicology. Lists and copies of these bibliographies may be obtained from the Federation of American Societies for Experimental Biology (FASEB), Special Publications, 9650 Rockville Pike, Bethesda, MD 20814.

Under the sponsorship of the DHHS Committee to Coordinate Environmental and Related Programs, TIP reports new toxicity testing projects, including epidemiological studies, in TOX–TIPS (Toxicology Testing-in-Progress), a monthly current awareness bulletin available from the National Technical Information Service for $40 (North America) and $80 (other). TOX–TIPS utilizes voluntary contributions of reports about planned and ongoing testing from government, industry and academia. The Toxicology Research Projects Directory (TRPD), is no longer available as a monthly publication, but is a part of one of the subsets (RPROJ) of the TOXLINE database.

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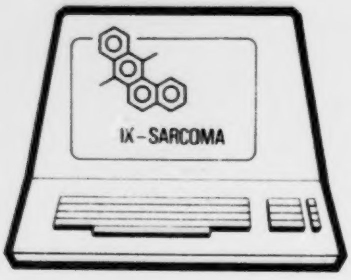

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The Toxicology Data Bank (TDB) is an online, interactive file containing chemical, pharmacological, and toxicological data extracted from textbooks, handbooks, criteria documents, and monographs. The file is created by the Specialized Information Services (SIS) in collaboration with Oak Ridge National Laboratory (ORNL). It is made available through the National Library of Medicine's online service, the Medical Literature Analysis and Retrieval System (MEDLARS). TDB contains data and information on about 3000 compounds. Data in TDB have been reviewed by a peer group of scientists.

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TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

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TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

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Several years ago, a few government agencies joined in establishing the Information Response to Chemical Concerns (IRCC) Project. These federal organizations concerned with toxic substances had a fundamental need for information about chemical substances and related topics. One goal of the Project was to produce annotated bibliographies on topics of current interest in toxicology. Six of them are now available. All of them have been prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine. They are published by the Federation of American Societies for Experimental Biology.

The IRCC Project has been sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Disease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The two most recent publications in this series are:

NLM/TIRC-81-1 Toxicity of Vanadium Compounds: A Bibliography with Abstracts 1965-1980. N.S. Dailey, S.A. Mashburn, and S.G. Winslow. July 1981. 100 pages. $15.00 postpaid.

NLM/TIRC-81-2 The effects of Environmental Chemicals on the Immune System: A Selected Bibliography with Abstracts 1969-1980. S.G. Winslow. November 1981. 76 pages. $10.00 postpaid.

The first four publications released were:

NLM/TIRC-80-1 Health and Environmental Effects of Acid Rain: An Abstracted Literature Collection 1966-1979. N.S. Dailey and S.G. Winslow. Toxicology Information Response Center. March 1980. 202 pages. $15.00 postpaid.

NLM/TIRC-80-2 Asbestos in Air: A Bibliography with Abstracts 1964-1980. J.G. Pruett and S.G. Winslow. Toxicology Information Response Center. July 1980. 52 pages. $7.00 postpaid.

Carol B. Haberman

EDITOR, TOX-TIPS

NLM/TIRC-80-4 Health Aspects of Urea/Formaldehyde Compounds. A Selected Bibliography with Abstracts 1963-1980. N.P. Drago, J.G. Pruett and S.G. Winslow. Toxicology Information Response Center. December 1980. 52 pages. $7.50 postpaid.

NLM/TIRC-80-3 Chemical Waste Disposal - Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes. A Selected Bibliography with abstracts 1964-1979. J.G. Pruett and S.G. Winslow. Toxicology Information Response Center. November 1980. 82 pages. $10.00 postpaid.

All of these documents can be ordered from: FASEB Special Publications, 9650 Rockville Pike, Bethesda MD 20814.

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Contract No: and/or NTP No. 10399-G
Control No: NCI No. C04148

PROJECT TITLE:

NTP Toxicological Testing Program: Methyl Bromide

INVESTIGATOR(S):

Chemical Manager:

Dr. Kenneth Chu

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

National Institute of Environmental Health Sciences
National Toxicology Program
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In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is methyl bromide.

CAS Registry No.
Methyl bromide 74-83-9

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

TARDIFF RG ; CARLSON GP ; SIMMON V
HALOGENATED ORGANICS IN TAP WATER A TOXICOLOGICAL EVALUATION
JOLLEY, ROBERT L. (ED.). WATER CHLORINATION. ENVIRONMENTAL IMPACT AND HEALTH EFFECTS, VOL. 1. PROCEEDINGS OF THE CONFERENCE ON THE ENVIRONMENTAL IMPACT OF WATER CHLORINATION. OAK RIDGE, TENN. USA, OCT. 22-24, 1975. XVI+439P. ILLUS. ANN ARBOR SCIENCE PUBLISHERS, INC.: ANN ARBOR, MICH., USA. ISBN 0-250-40201-7.; 1978 195-209

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FDA PUBL(US); (FDA-78-1046):163-171,1978

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Zentralbl. Bakteriol., Abt. 1: Orig., [Reihe] B; VOL 171, ISS 1, 1980,48-54

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Sangvo Igaku Sogo-Kenkyusho Nempo (Ann. Rep. Natl. Inst. Ind. Health) pp. 23 1980

Homma T ; Sudo A ; Miyagawa M ; Sato M ; Hasegawa H ; Suda M
Studies on intoxication due to methyl bromide (3) - effects of methyl bromide on central nervous system.
Sangyo Igaku Sogo-Kenkyusho Nempo (Ann. Rep. Natl. Inst. Ind. Health) pg. 22 1980 (1 Reference)

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Okonogi K
Studies on intoxication due to methyl bromide (2) - distribution of methyl bromide and bromine in the living body.
Sangvo Igaku Sogo-Kenkyusho Nempo (Ann. Rep. Natl. Inst. Ind. Health) pg. 22 1980 (1 Reference)

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Control No: NCI No. C61369

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Molybdenum Trioxide

INVESTIGATOR(S):
Chemical Manager:

Dr. J. Quest

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

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Included in this group of chemicals is molybdenum trioxide.

CAS Registry No.
Molybdenum trioxide 1313-27-5

TOX-TIPS MARCH 1982 70-7

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experiment with molybdenum poisoning.
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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or. Control No: NTP No. 10153-R
NCI No. C60195

PROJECT TITLE:

NTP Toxicological Testing Program: Status of D-Phenylalanine

INVESTIGATOR(S):

Chemican Manager:

Dr. K. Abdo

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:

Start Date: -
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is D-phenylalanine.

CAS Registry No.
D-Phenylalanine 673-06-3

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10055-T
and/or
Control No: NCI No. C56597

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Sucrose

INVESTIGATOR(S):
Chemical Manager:

Dr. C. E. Whitmire

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP:
Start Date: -
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is sucrose.

CAS Registry No.
Sucrose 57-50-1

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10167-P
and/or
Control No: NCI No. C06008

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Talc

INVESTIGATOR(S):
Chemical Manager:

Dr. S. Brown

Contact:
DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is talc.

CAS Registry No.
Talc 14807-96-6

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Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10275-V
and/or
Control No: NCI No. C56371

PROJECT TITLE:
NTP Toxicological Testing Program: Status of l-trans-delta(9)-Tetrahydrocannabinol

INVESTIGATOR(S):
Chemical Manager:

Dr. D. Goldman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

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Start Date:
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PROJECT SUMMARY:

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Included in this group of chemicals is l-trans-delta(9)-tetrahydrocannabinol. The compound is a naturally occurring substance.

CAS Registry No.
l-trans-delta(9)-
Tetrahydrocannabinol 1972-08-3

TOX-TIPS MARCH 1982 70-15

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Br. J. Clin. Pharmacol.; VOL 12, ISS 5, 1981,705-20

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NTP No. 10081-C
and/or
Control No: NCI No. C61370

PROJECT TITLE:

NTP Toxicological Testing Program: Status of alpha-Tocopherol (Vitamin E)

INVESTIGATOR(S):

Chemical Manager:

Dr. K. Abdo

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

National Institute of Environmental
Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is alpha-Tocopherol (Vitamin E).

CAS Registry No.

alpha-Tocopherol 59-02-9
Vitamin E 1406-18-4

TOX-TIPS MARCH 1982 70-17

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NTP No.
and/or
Control No: NCI No.

PROJECT TITLE:

NTP Toxicological Testing Program: Status of Vanadium Pentoxide

INVESTIGATOR(S):

Chemical Manager:

Dr. R. Niemeier

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address Including Zip Code:
National Institute for Occupational Safety and Health
Taft Laboratories, C22
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP –

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is vanadium pentoxide.

CAS Registry No.
Vanadium pentoxide 1314-62-1

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NOTICE OF RESEARCH PROJECT

TOX-TIPS

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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No.
and/or
Control No: NCI No.

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Zinc Oxide

INVESTIGATOR(S):
Chemical Manager:

Dr. W. Moorman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute for Occupational Safety and Health
Taft Laboratories, C22
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is zinc oxide.

CAS Registry No.
Zinc Oxide 1314-13-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Comm. Eur. Communities, [Rep.] EUR; ISS EUR 6388, Environ. Res.
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MORPHOLOGICAL AND HISTOCHEMICAL CHANGES OCCURRING IN THE BRAIN
FOLLOWING INGESTION OF LARGE DOSES OF ZINC OXIDE
THE 3RD POLISH-HUNGARIAN SYMPOSIUM ON TOXIC ENCEPHALOPATHIES AND
NEUROPATHIES, CRACOW, POLAND, SEPT. 20-22, 1979. NEUROPATOL POL;
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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10242-J
and/or
Control No: NCI No. C60822

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Acetonitrile

INVESTIGATOR(S):
For further information, contact:
Technical Information Section
Dr. J. L. McCoy,
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Hazelton Laboratories
9200 Leesburg Pike
Vienna, VA 22180

PERIOD FOR THIS NRP:
Start Date: August 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (*in vivo* microbial, *in vivo* mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Acetonitrile has been assigned to the contractor for testing through the subchronic phase.

CAS Registry No.
Acetonitrile 75-05-8

TOX-TIPS MARCH 1982 70-23

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MUTAT RES; 88:343-350,1981

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Toxicology; VOL 15, ISS 3, 1980,219-32

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Clin. Toxicol.; VOL 18, ISS 8, 1981,991-1003

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10280-H
and/or
Control No: NCI No. C61074

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Barium Chloride

INVESTIGATOR(S):
For further information, contact:
Technical Information Section
Dr. B. Gupta,
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (*in vivo* microbial, *in vivo* mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The barium chloride testing project is in the experimental design stage.

CAS Registry No.
Barium chloride 10361-37-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Toxicol Appl Pharmacol; VOL 50, ISS 1, 1979, P25-30

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Indian Heart J; VOL 31, ISS 4, 1979, P244-5

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NTP No. 10208-C
and/or
Control No: NCI No. C60355

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of 4-Chloro-2-Nitroaniline

INVESTIGATOR(S):

For further information, contact:
Technical Information Section
Dr. J. L. McCoy,
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address.
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PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (*in vivo* microbial, *in vivo* mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

4-Chloro-2-nitroaniline has been scheduled for testing.

CAS Registry No.
4-Chloro-2-nitroaniline 89-63-4

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Chemosphere; VOL 8, ISS 11-12, 1979,863-7

Vasilenko NM
Specific and nonspecific indexes in blood changes during poisoning by aromatic nitro amino compounds of the benzene series
Tr. Khar'k. Med. Inst.; VOL 124,, 1976,34-8

Vasilenko NM ; Zvezdai VI
Leading role of disturbed heme metabolism during poisoning by aromatic nitro and amino compounds
Fiziol. Patol. Obmena Porfirinov Gema, Mater. Simp., 1st;
1974,60-3

METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

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National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

JOURNAL LITERATURE

Reitamo, S., et al. Allergic and toxic contact dermatitis: inflammatory cell subtypes in epicutaneous test reactions. *Br J Dermatol*, 105, 521-7, 1981.

> T lymphocytes, mononuclear phagocytes, and plasma cells were identified in responses to allergic and to toxic reactions in an attempt to differentiate between these

responses. The authors found no statistical difference in the basic response although it seemed possible that some degree of qualitative and quantitative difference did occur.

Gilchrest, B.A. Quantitative approach to measuring actinic aging in human skin.
J Soc Cosmet Chem 32, 153-162, 1981.

Tests were developed to measure quantitatively the effects of sunlight on aging skin. The number of population doublings was less in cultured cells from skin exposed to sunlight. The difference increased directly with signs of clinical aging. The method was shown to be effective in quantitatively assessing environmental effects on human skin.

Schmalz, G. and Schmalz, C. Toxicity tests on dental filling materials.
Int Dent J 31, 185-92, 1981.

The implantation of solid materials in rabbit muscle was studied as a method of screening chemical toxicity, in this case dental filling materials. The materials, amalgams, were allowed to age for different times before implantation. Macroscopic as well as histological evaluations were made. The reactions observed were directly dependent upon the aging time. This observation is in accord with clinical experience.

Culliton, C.R., et al. A critical evaluation of the acute systemic toxicity test for dental alloys using histopathologic criteria.
J Biomed Mater Res 15, 565-75, 1981.

Compliance on the basis of less than 50% mortality at 2 weeks is the definition given by the A.D.A. for an acute systemic test. In this research, histopathologic criteria were developed for type II, class 11 materials. Significant changes occurred in lung, liver, kidney, and small intestine for all alloys studied two and five weeks after treatment. At the later time, the alloys with the higher noble metal content showed healing and an absence of significant changes. On the other hand those alloys with the lower amounts of Au, Pd, and Pt still showed significant chronic changes. The standardization of such criteria and the statistical parameters will make possible reproducible and comparable results by independent investigators and examiners.

Hansen, S.R. Screening for toxic effects on interspecies interactions: a mechanistic or an empirical approach?
Arch Environ Contam Toxicol 10, 597-603, 1981.

Both empirical and mechanistic approaches are possible in developing tests for substances; both approaches have specific advantages and disadvantages. These are discussed by the authors in terms of the screening for a substance's potential to affect interspecies interactions. The test situation used was the competition between bacterial species and its disruption by nalidixic acid. The mechanistic test proved"...faster, cheaper, more sensitive and more quantitative." Continuous monitoring which required greater cost and time was necessary to achieve similar sensitivity and quantification for the empirical test.

Heywood, R. Target organ toxicity.
Toxicol Lett 8, 349-58, 1981.

The relatively simple criteria of growth, organ weight, liver and kidney function tests, and clinical observation of the animal combined with histological examination of selected tissues appeared to be the sensitive criteria of toxicology as determined in a survey of studies on 50 compounds in rodent and non-rodent species. "There was poor correlation of target organ toxicity across the species." Therefore, the absence of toxic signs is seen as more important than the demonstration of organ toxicity. The authors recommend the use of a "...step by step approach based on biological activity" to provide data necessary for safety evaluation of a compound.

Grosdanoff, P. Possible grounds for the distinct test results from embryo toxicological studies.
AMI-Ber; Issue 1, 125-8, 1981.

The factors that may possibly produce variations in tests on the embryotoxicity of drugs are reviewed.

Vanhaecke, P., et al. Proposal for a short-term toxicity test with Artemia nauplii.
Eco Toxicol Environ Safety 5, 382-7, 1981.

This is a review of the artemia toxicity test.

Zbinden, G. Experimental methods in behavioral teratology.
Arch Toxicol 48, 68-88, 1981.

This review describes the experimental methods which may be used as toxicological techniques to study behavioral teratogens. The author emphasizes that these methods are based on a wealth of experience and data in experimental psychology. Most of the tests have been used with rats and may be influenced by a "...large variety of environmental factors affecting the health and behavior of the mothers and of the offspring...". The importance of "...highly standardized conditions..." and their rigorous control is discussed at length.

Wyttenbach, C.R., et al. Precision delivery of small volumes of liquids to very young avian embryos: 1. Locating and positioning the embryo in ovo.
Toxicol Appl Pharmacol 59, 40-48, 1981.

Young embryos of three days or younger have been considered unresponsive to teratogenic agents. The authors considered the possibility that this relative unresponsiveness may be due to the difficulties of handling such embryos rather to a true failure to respond to the agents being studied. They, therefore, developed methods for candling and injecting 8 to 60-h embryos. With these methods actual contact between the embryo and injected corn oil could be shown within 45 min of injection in 90-100% of the embryos. Under these circumstances the younger embryos (24- 96-h chick embryos) were the most susceptible to malathion. The susceptibility declined with increasing age of the embryo.

Franchina, J.J. and Dietz, S. Taste aversion following backward conditioning procedures in preweanling and adult rats.
Dev Psychobiol 14, 499-505, 1981.

Reliable aversion effects for rats 18 and 90 days old were obtained using a two bottle choice procedure at each toxicosis-flavor interval. Greater and more reliable persistence of aversion was shown by adult animals for the 10- rather than the 30-min training interval. From test trial 2 onward "...the magnitude of aversion was similar for pups and adult rats."

Sovak, M. and Ranganathan, R. and Mutzel, W. Determination of lethal dose in a protozoa: screening of contrast media toxicity. *Invest Radiol: 16*, 438-42, 1981.

The suitability of protozoa for toxicology studies on contrast media was investigated. The time at which 50% mortality occurred was determined after the cultures were standardized using sodium iothalamate and/or Metrizamide. "Comparison of ...toxicity determined by protozoa LD50 at 7 minutes with i.v. LD50 in mice showed a good correlation ...". The protozoa assay seems, therefore, to have usefulness" ...as a complimentary or screening method."

TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

ORGANIZATION—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

PERSONNEL—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

INFORMATION RESOURCES—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

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SEARCH COMPLETION TIME—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

INFORMATION SERVICES—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

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QUARTERLY INDEX OF COMPOUNDS

This quarterly index lists compounds under test and those for which tests have been completed and published. The index will be updated and reprinted in the June, 1982 issue. Citations for compounds announced as under test give the issue number and page for TOX-TIPS. Those for which testing has been completed and published cite the journal or other report in which test data can be found.

National Toxicology Program/National Cancer Institute Bioassay Reports may be ordered from the National Technical Information Service, Springfield, Virginia 22161, using the PB-number cited.

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NOTICE OF RESEARCH PROJECT

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Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

Before completing this form, please see reverse side for instructions.

INSTRUCTIONS FOR FILLING IN THE FORM

Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

Performing Organization

Enter name of organization where work is actually being done.

Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

Project Summary

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
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Bethesda, Md. 20209
Telephone: (301) 496-1131

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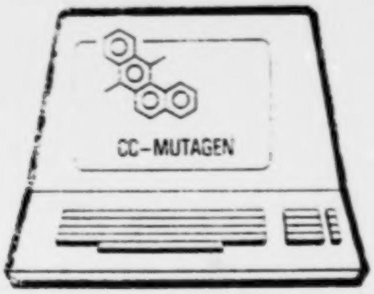

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RTECS (Registry of Toxic Effects of Chemical Substances) is in the National Library of Medicine's online version of the National Institute for Occupational Safety and Health's (NIOSH) annual compilation of substances with toxic action. The original collection of data that makes up RTECS was known as the Toxic Substances List, compiled in 1971 by NIOSH in response to the Occupational Safety and Health Act of 1970. The hard copy version of RTECS is updated annually with quarterly microfiche editions available. NIOSH is responsible for the file content in RTECS, and for providing quarterly updates to NLM. RTECS currently contains toxicity data for more than 50,000 substances (1/82).

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability.

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The user can search RTECS for a particular chemical record by entering the Secondary Source ID, CAS Type 1 Name, Synonyms, or CAS Registry Number. The user can also search RTECS for information on a group of compounds or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected effects reported for a given substance. Online RTECS gives the user the flexibility of interactive searching and retrieval which allows focusing on subsets of data and tailoring of prints according to user needs.

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TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

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TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

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FROM THE EDITOR

Dear Colleague:

This issue contains a complete listing of the reports available from the National Technical Information Service concerning the National Cancer Institute/National Toxicology Program Carcinogenesis Testing Program. Two hundred forty-two reports are available from NTIS, and another ten are in preparation.

These reports describe experiments designed to determine whether selected chemicals produce cancer in animals. Most of the studies were initiated by the National Cancer Institute's Carcinogenesis Testing Program which is now a part of the National Institute of Environmental Health Sciences, National Toxicology Program.

Chemicals selected for testing in the NTP Carcinogenesis Bioassay Program are chosen primarily on the bases of human exposure, level of production, and chemical structure. Selection of a chemical for study is not an indicator of the substance's carcinogenic potential; furthermore, positive results demonstrate that the substance is carcinogenic for animals under the conditions of the test. Such results indicate that exposure to the chemical is a potential hazard to humans.

Please order reports available from NTIS directly from that organization.

Carol B. Haberman

EDITOR, TOX-TIPS

TOX-TIPS

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NATIONAL TOXICOLOGY PROGRAM
CARCINOGENESIS TESTING PROGRAM

REPORTS AVAILABLE

as of April 1982

National Toxicology Program
Carcinogenesis Testing Program

REPORTS IN PRESS

NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/ NTP TR NO
10754-C	9002-18-0	Agar	C50475	FEED	RM	230
10034-Y	80-05-7	Bisphenol A	C50635	FEED	RM	215
10723-Y	3567-69-9	C.I. Acid Red 14	C53849	FEED	RM	220
10465-X	96-12-8	Dibromochloropropane	C00500B	INHAL	RM	206
10513-F	106-93-4	1,2-Dibromoethane	C00522B	INHAL	RM	210
10647-A	609-20-1	2,6-Dichloro-para-Phenylenediamine	C50260	FEED	RM	219
10183-J	117-81-7	Di(2-Ethylhexyl)Phthalate	C52733	FEED	RM	217
10752-T	9000-30-0	Guar Gum	C50395	FEED	RM	229
10793-E	39300-88-4	Tara Gum	C54364	FEED	RM	224
10157-G	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-Dioxin	C03714A	GAV	RM	209

To determine availability of these reports, contact:
Steven d'Arazien, National Toxicology Program, NIEHS,
Post Office Box 12233, Research Triangle Park, NC 27709.

National Toxicology Program
Carcinogenesis Testing Program

REPORTS AVAILABLE AT NTIS

NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/ NTP TR NO	NTIS NUMBER**
10667-R	968-81-0	Acetohexamide	C03247	FEED	RM	50	PB284673/AS
	7008-42-6	Acronycine	C01536	IP/IJ	RM	49	PB283347/AS
	50-76-0	Actinomycin D	C04682	IP/IJ	RM	a	JOURNAL ART
10713-R	2757-90-6	Agaritine	C08899	WATER	RM		
10539-V	116-06-3	Aldicarb	C08640	FEED	RM	136	PB298511/AS
	309-00-2	Aldrin	C00044	FEED	RM	21	PB275666/AS
10516-S	107-05-1	Allyl Chloride	C04615	GAV	RM	73	PB287516/AS
10542-A	117-79-3	2-Aminoanthraquinone	C01876	FEED	RM	144	PB287739/AS
10901-K	17026-81-2	3-Amino-4-Ethoxyacetanilide	C01887	FEED	RM	112	PB285194/AS
10579-C	132-32-1	3-Amino-9-Ethylcarbazole, Hydrochloride	C03043	FEED	RM	93	PB287126/AS
10419-Y	82-28-0	1-Amino-2-Methylanthraquinone	C01901	FEED	RM	111	PB286852/AS
10547-V	119-34-6	4-Amino-2-Nitrophenol	C03963	FEED	RM	94	PB286189/AS
10561-L	121-66-4	2-Amino-5-Nitrothiazole	C03065	FEED	RM	53	PB283346/AS
10433-F	101-05-3	Anilazine	C08684	FEED	RM	104	PB287141/AS
10596-F	142-04-1	Aniline Hydrochloride	C03736	FEED	RM	130	PB287539/AS
10582-G	134-29-2	o-Anisidine Hydrochloride	C03747	FEED	RM	89	PB285879/AS
10775-W	20265-97-8	p-Anisidine Hydrochloride	C03758	FEED	RM	116	PB286951/AS
	118-92-3	o-Anthranilic Acid	C01730	FEED	RM	36	PB278883/AS

a "Cancer", 1977, Vol. 40 pp 1935-1949.

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

REPORTS AVAILABLE AT NTIS

NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/ NTP TR NO	NTIS NUMBER**
10804-S	11097-69-1	Arochlor-1254	C02664	FEED	R	38	PB279624/AS
10749-N	8003-03-0	Aspirin, Phenacetin, And Caffeine	C02697	FEED	RM	67	PB284684/AS
10889-A	320-67-2	5-Azacytidine	C01569	IP/IJ	RM	42	PB279526/AS
	446-86-6	Azathioprine	C03474	IP/IJ	RM	a	JOURNAL ART
10424-L	86-50-0	Azinphosmethyl	C00066	FEED	RM	69	PB286371/AS
10499-L	103-33-3	Azobenzene	C02926	FEED	RM	154	PB293835/AS
10550-A	119-53-9	Benzoin	C50011	FEED	RM	204	PB30/217953
10453-G	95-14-7	1H-Benzotriazole	C03521	FEED	RM	88	PB285202/AS
	154-93-8	1,3-Bis(Chloroethyl)-1-Nitrosourea	C04773	IP/IJ	RM	a	JOURNAL ART
10523-N	108-60-1	Bis(2-Chloro-1-Methylethyl) Ether	C50044A	GAV	RM	191	PB299741/AS
10575-K	128-37-0	Butylated Hydroxytoluene (BHT)	C03598	FEED	RM	150	PB298539/AS
10606-P	156-62-7	Calcium Cyanamide	C02937	FEED	RM	163	PB293625/AS
10505-F	105-60-2	Caprolactam	C50646	FEED	RM	214	PB82109158
	133-06-2	Captan	C00077	FEED	RM	15	PB273475/AS
10408-L	77-65-6	Carbromal	C03805	FEED	RM	173	PB290130/AS
10823-E	133-90-4	Chloramben	C00055	FEED	RM	25	PB273065/AS
10850-R	305-03-3	Chlorambucil	C03485	IP/IJ	RM	a	JOURNAL ART
10849-T	12789-03-6	Chlordane	C00099	FEED	RM	8	PB271977/AS

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NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/ NTP TR NO	NTIS NUMBER**
10097-H	143-50-0	Chlordecone	C00191	FEED	RM	b	PB264041/AS
10592-P	140-49-8	4'-(Chloroacetyl)-Acetanilide	C03770	FEED	RM	177	PB288754/AS
10190-P	106-47-8	p-Chloroaniline	C02039A	FEED	RM	189	PB295896/AS
10088-E	510-15-6	Chlorobenzilate	C00408	FEED	RM	75	PB287123/AS
10669-Y	999-81-5	(2-Chloroethyl) Trimethylammonium Chlori	C02960	FEED	RM	158	PB293627/AS
10384-E	67-66-3	Chloroform	C02686	GAV	RM	c	PB264018/AS
10738-C	6959-47-3	2-(Chloromethyl)Pyridine Hydrochloride	C03907	GAV	RM	178	PB295895/AS
10739-F	6959-48-4	3-(Chloromethyl)Pyridine Hydrochloride	C03838	GAV	RM	95	PB287125/AS
10728-T	5131-60-2	4-Chloro-m-Phenylenediamine	C03305	FEED	RM	85	PB285201/AS
10892-F	95-83-0	4-Chloro-o-Phenylenediamine	C03292	FEED	RM	63	PB283362/AS
10801-F	61702-44-1	2-Chloro-p-Phenylenediamine Sulfate	C03316	FEED	RM	113	PB286370/AS
10348-P	76-06-2	Chloropicrin	C00533	GAV	RM	65	PB282311/AS
10692-V	1897-45-6	Chlorothalonil	C00102	FEED	RM	41	PB286369/AS
10720-L	3165-93-3	4-Chloro-o-Toluidine Hydrochloride	C02368	FEED	RM	165	PB295864/AS
10462-K	95-79-4	5-Chloro-o-Toluidine	C02951	FEED	RM	187	PB291468/AS
10460-D	95-74-9	3-Chloro-p-Toluidine	C02040	FEED	RM	145	PB287401/AS
10847-K	94-20-2	Chlorpropamide	C01752	FEED	RM	45	PB275178/AS
10886-N	1937-37-7	C.I. Direct Black 38	C54557	FEED	RM	108	PB280204/AS

b NCI Brief Communication
c No TR No. Assigned
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Carcinogenesis Testing Program

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NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/ NTP TR NO	NTIS NUMBER**
10883-C	2602-46-2	C.I. Direct Blue 6	C54579A	FEED	RM	108	PB280204/AS
10882-X	16071-86-6	C.I. Direct Brown 95	C54568	FEED	RM	108	PB280204/AS
10426-V	87-29-6	Cinnamyl Anthranilate	C03510	FEED	RM	196	PB81/143141
10576-P	128-66-5	C.I. Vat Yellow 4	C03565	FEED	RM	134	PB288821/AS
10682-L	1420-04-8	Clonitralid	C00431	FEED	RM	91	PB287124/AS
10366-W	56-72-4	Coumaphos	C08662	FEED	RM	96	PB290305/AS
10494-S	102-50-1	m-Cresidine	C02993	GAV	RM	105	PB286188/AS
10556-Y	120-71-8	p-Cresidine	C02982	FEED	RM	142	PB295835/AS
10585-T	135-20-6	Cupferron	C03258	FEED	RM	100	PB287409/AS
10351-T	50-18-0	Cyclophosphamide	C04900	IP/IJ	RM	a	JOURNAL ART
10843-V	147-94-4	Cytarabine	C04728	IP/IJ	RM	a	JOURNAL ART
10778-H	21739-91-3	Cytembena	C50737	IP/IJ	RM	207	PB82/163312
10842-R	4465-94-5	Cytoxyl Alcohol	C04922	IP/IJ	RM	a	JOURNAL ART
10840-H	4342-03-4	Dacarbazine	C04717	IP/IJ	RM	a	JOURNAL ART
10890-X	80-08-0	Dapsone	C01718	FEED	RM	20	PB274394/AS
	20830-81-3	Daunomycin	C04693	IP/IJ	RM	a	JOURNAL ART
10789-V	33857-26-0	DCDD(2,7-Dichlorodibenzo-p-Dioxin)	C03667B	FEED	RM	123	PB290570/AS
10945-H	53-19-0	o,p'-DDD(o,p'-dichlorodiphenyldichloroet	C04933	IP/IJ	RM	a	JOURNAL ART

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Carcinogenesis Testing Program

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NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/ NTP TR NO	NTIS NUMBER**
10393-H	72-55-9	p,p'-DDE(p,p'-dichlorodiphenyldichloroet	C00555	FEED	RM	131	PB286367/AS
10352-X	50-29-3	DDT(p,p'-dichlorodiphenyltrichloroethane	C00464	FEED	RM	131	PB286367/AS
10792-A	39156-41-7	2,4-Diaminoanisole Sulfate	C01989	FEED	RM	84	PB279940/AS
10463-P	95-80-7	2,4-Diaminotoluene	C02302	FEED	RM	162	PB293593/AS
10685-Y	1596-84-5	Diaminozide	C03827	FEED	RM	83	PB285073/AS
10839-K	6358-85-6	Diarylanilide Yellow	C03269	FEED	RM	30	PB278272/AS
10611-D	333-41-5	Diazinon	C08673	FEED	RM	137	PB293889/AS
10607-T	262-12-4	Dibenzo-p-Dioxin	C03656A	FEED	RM	122	PB288475/AS
10465-X	96-12-8	Dibromochloropropane	C00500A	GAV	RM	28	PB277472/AS
10838-G	10318-26-0	Dibromodulcitol	C04795	IP/IJ	RM	a	JOURNAL ART
10513-F	106-93-4	1,2-Dibromoethane	C00522A	GAV	RM	86	PB288428/AS
10837-D	488-41-5	Dibromomannitol	C04762	IP/IJ	RM	a	JOURNAL ART
10670-W	1067-33-0	Dibutyltin Diacetate	C02028	FEED	RM	183	PB291567/AS
	75-34-3	1,1-Dichloroethane	C04535	GAV	RM	66	PB283345/AS
13962-L	107-06-2	1,2-Dichloroethane	C00511	GAV	RM	55	PB285968/AS
10836-Y	528-74-5	Dichloromethotrexate	C04875	IP/IJ	RM	a	JOURNAL ART
10017-V	62-73-7	Dichlorvos	C00113A	FEED	RM	10	PB270937/AS
10835-V	115-32-2	Dicofol	C00486	FEED	RM	90	PB286206/AS

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Carcinogenesis Testing Program

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NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/NTP TR NO	NTIS NUMBER**
10673-H	1212-29-9	N,N'-Dicyclohexylthiourea	C04524	FEED	RM	56	PB281539/AS
10834-R	60-57-1	Dieldrin	C00124A	FEED	RM	21	PB275666/AS
10834-R	60-57-1	Dieldrin	C00124B	FEED	R	22	PB275676/AS
10497-E	103-23-1	Di(2-Ethylhexyl)Adipate	C54386	FEED	RM	212	PB82109166
10503-X	105-55-5	N,N'-Diethylthiourea	C03816	FEED	RM	149	PB288626/AS
10888-W	60-51-5	Dimethoate	C00135	FEED	RM	4	PB264367/AS
10797-V	54150-69-5	2,4-Dimethoxyaniline Hydrochloride	C02255	FEED	RM	171	PB288625/AS
10115-S	91-93-0	3,3'-Dimethoxybenzidine-4, 4'-Diisocyana	C02175	FEED	RM	128	PB290154/AS
10553-L	120-61-6	Dimethyl Terephthalate	C50055	FEED	RM	121	PB299903/AS
10558-G	121-14-2	2,4-Dinitrotoluene	C01865	FEED	RM	54	PB280990/AS
10568-P	123-91-1	1,4-Dioxane	C03689B	WATER	RM	80	PB285711/AS
10411-S	78-34-2	Dioxathion	C00395	FEED	RM	125	PB286185/AS
10905-C	142-46-1	2,5-Dithiobiurea	C03009	FEED	RM	132	PB291534/AS
	150-38-9	EDTA (Trisodium Ethylenediamine tetracet	C03974	FEED	RM	11	PB270938/AS
	483-18-1	Emetine	C01605	IP/IJ	RM	43	PB278891/AS
10879-S	115-29-7	Endosulfan	C00566	FEED	RM	62	PB281731/AS
10391-A	72-20-8	Endrin	C00157	FEED	RM	12	PB288461/AS
	22966-79-6	Estradiol Mustard	C01570	GAV	RM	59	PB285787/AS

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* New to this table since last report
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National Toxicology Program
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REPORTS AVAILABLE AT NTIS

NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/ NTP TR NO	NTIS NUMBER**
	536-33-4	Ethionamide	C01694	FEED	RM	46	PB285193/AS
10394-L	72-56-0	p,p-Ethyl DDD (Perthane)	C02868	FEED	RM	156	PB290582/AS
10777-E	20941-65-5	Ethyl Tellurac	C02857	FEED	RM	152	PB298513/AS
10714-V	2783-94-0	FD&C Yellow 6	C53907	FEED	RM	208	PB82117433
10362-F	55-38-9	Fenthion	C08651	FEED	RM	103	PB293832/AS
10697-P	2164-17-2	Fluometuron	C08695	FEED	RM	195	PB80/217904
10593-T	140-56-7	Formulated Fenaminosulf	C03010	FEED	RM	101	PB287443/AS
10876-F	1455-77-2	Guanazole	C04819	IP/IJ	RM	a	JOURNAL ART
10875-C	76-44-8	Heptachlor	C00180	FEED	RM	9	PB271967/AS
10770-S	57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	C03703A	GAV	RM	198	PB80/124844
10790-S	57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	C03703B	SP	M	202	PB80/124836
10126-E	67-72-1	Hexachloroethane	C04604A	GAV	RM	68	PB282668/AS
10387-R	70-30-4	Hexachlorophene	C02653	FEED	R	40	PB279525/AS
10872-P	122-66-7	Hydrazobenzene	C01854	FEED	RM	92	PB285791/AS
10871-K	127-07-1	Hydroxyurea	C04831	IP/IJ	RM	a	JOURNAL ART
	21416-87-5	ICRF-159(bis-4,4'-(1-methyl-1,2-ethanedi	C01627	IP/IJ	RM	78	PB285853/AS
10383-D	75-47-8	Iodoform	C04568	GAV	RM	110	PB286344/AS
	3458-22-8	IPD (3,3'-Iminobis-1-Propanol Dimethylsu	C01547	IP/IJ	RM	18	PB277455/AS

a "Cancer", 1977, Vol. 40 pp 1935-1949.
a "Cancer", 1977, Vol. 40 pp 1945-1949.
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NTP NUMBER	PRIMARY CAS NUMBER	CHEMICAL NAME	NCI NUMBER	ROUTE	SPEC	NCI/ NTP TR NO	NTIS NUMBER**
	3778-73-2	Isophosphamide	C01638	IP/IJ	RM	32	PB275677/AS
10868-F	303-34-4	Lasiocarpine	C01478	FEED	R	39	PB278641/AS
10772-J	19010-66-3	Lead Dimethyldithiocarbamate	C02891	FEED	RM	151	PB298512/AS
10865-T	58-89-9	Lindane	C00204	FEED	RM	14	PB273480/AS
10617-C	434-13-9	Lithocholic Acid	C03861	GAV	RM	175	PB288476/AS
10753-X	9000-40-2	Locust Bean Gum	C50419	FEED	RM	221	PB82163320
	13010-47-4	Lomustine	C04740	IP/IJ	RM	a	JOURNAL ART
10686-D	1634-78-2	Malaoxon	C08628	FEED	RM	135	PB299858/AS
10563-V	121-75-5	Malathion	C00215A	FEED	RM	24	PB278527/AS
10563-V	121-75-5	Malathion	C00215B	FEED	R	192	PB300301/AS
11171-J	148-82-3	Melphalan	C04853	IP/IJ	RM	a	JOURNAL ART
10767-W	15356-70-4	dl-Menthol	C50000	FEED	RM	98	PB288761/AS
	50-44-2	6-Mercaptopurine	C04886	IP/IJ	RM	a	JOURNAL ART
	531-76-0	Merphalan	C04944	IP/IJ	RM	a	JOURNAL ART
	59-05-2	Methotrexate	C04671	IP/IJ	RM	a	JOURNAL ART
10863-K	72-43-5	Methoxychlor	C00497	FEED	RM	35	PB278271/AS
	13909-09-6	Methyl CCNU(1-nitrosourea-1-(2-chloroeth	C04955	IP/IJ	RM	a	JOURNAL ART
10487-W	101-61-1	4,4'-Methylenebis(N,N-Dimethyl)Benzenami	C01990	FEED	RM	186	PB299856/AS

a "Cancer", 1977, Vol. 40 pp 1935-1949.

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	342-69-8	@6-Methylmercaptopurine Ribonucleoside	C04784	IP/IJ	RM	a	JOURNAL ART
10910-P	129-15-7	@2-Methyl-1-Nitroanthraquinone	C01923A	FEED	R	29	PB277439/AS
10910-P	129-15-7	@2-Methyl-1-Nitroanthraquinone	C01923B	FEED	M	d	JOURNAL ART
10608-X	298-00-0	@Methyl Parathion	C02971	FEED	RM	157	PB295891/AS
10610-Y	315-18-4	@Mexacarbate	C00544	FEED	RM	147	PB287471/AS
10440-L	90-94-8	@Michler's Ketone	C02006	FEED	RM	181	PB299855/AS
	50-07-7	@Mitomycin C	C04706	IP/IJ	RM	a	JOURNAL ART
10698-T	2243-62-1	@1,5-Naphthalenediamine	C03021	FEED	RM	143	PB287646/AS
10683-R	1465-25-4	@N-(1-Naphthyl)Ethylenediamine.2HCl	C03281	FEED	RM	168	PB289733/AS
10853-D	139-94-6	@Nithiazide	C03792	FEED	RM	146	PB295897/AS
10644-N	602-87-9	@5-Nitroacenaphthene	C01967	FEED	RM	118	PB287347/AS
10689-P	1777-84-0	@3'-Nitro-p-Acetophenetide	C01978	FEED	RM	133	PB299857/AS
10477-N	99-59-2	@5-Nitro-o-Anisidine	C01934	FEED	RM	127	PB287411/AS
10649-H	619-17-0	@4-Nitroanthranilic Acid	C01945	FEED	RM	109	PB286942/AS
10449-X	94-52-0	@6-Nitrobenzimidazole	C01912	FEED	RM	117	PB293834/AS
10691-R	1836-75-5	@Nitrofen	C00420A	FEED	RM	184	PB296038/AS
10691-R	1836-75-5	@Nitrofen	C00420B	FEED	RM	26	PB277440/AS
10425-R	86-57-7	@1-Nitronaphthalene	C01956	FEED	RM	64	PB282310/AS

[a] "Cancer", 1977, Vol. 40 pp 1935-1949.

[d] A. S. Krishna Murthy et al., "Int. J. Cancer: 19", 117-121 (1977)

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10476-J	99-56-9	4-Nitro-o-Phenylenediamine	C03941	FEED	RM	180	PB290306/AS
10730-V	5307-14-2	2-Nitro-p-Phenylenediamine	C02222	FEED	RM	169	PB290304/AS
10620-G	504-88-1	3-Nitropropionic Acid	C03076	GAV	RM	52	PB281102/AS
10143-H	1116-54-7	N-Nitrosodiethanolamine	C55583	WATER	RM	c	
10423-H	86-30-6	N-Nitrosodiphenylamine	C02880	FEED	RM	164	PB298275/AS
10605-K	156-10-5	P-Nitrosodiphenylamine	C02244	FEED	RM	196	PB291500/AS
10363-J	102-96-5	Beta-Nitrostyrene and Styrene	C02211	GAV	RM	170	PB300949/AS
10475-F	99-55-8	5-Nitro-o-Toluidine	C01843	FEED	RM	107	PB285872/AS
	139-13-9	NTA(Nitrilotriacetic Acid)	C02766	FEED	RM	6	PB266177/AS
10771-F	18662-53-8	NTA (Nitrilotriacetic Acid Trisodium Sal	C01445B	FEED	RM	6	PB266177/AS
10771-F	18662-53-8	NTA (Nitrilotriacetic Acid Trisodium Sal	C01445A	FEED	R	6	PB266177/AS
10490-C	101-80-4	4,4'-Oxydianiline	C50146	FEED	RM	205	PB80/217938
10942-W	56-38-2	Parathion	C00226	FEED	RM	70	PB288803/AS
10033-V	82-68-8	Pentachloronitrobenzene	C00419A	FEED	RM	61	PB281732/AS
10587-C	136-40-3	Phenazopyridine Hydrochloride	C01672	FEED	RM	99	PB286207/AS
10940-N	3546-10-9	Phenesterin	C01558	GAV	RM	60	PB283361/AS
10939-R	114-86-3	Phenformin	C01741	FEED	RM	7	PB266176/AS
10076-N	108-95-2	Phenol	C50124	WATER	RM	203	PB80/217946

c No TR No. Assigned

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10938-L	63-92-3	Phenoxybenzamine Hydrochloride	C01661	IP/IJ	RM	72	PB285095/AS
10650-F	624-18-0	p-Phenylenediamine Dihydrochloride	C03930	FEED	RM	174	PB290124/AS
10434-V	89-25-8	1-Phenyl-3-Methyl-5-Pyrazolone	C03952	FEED	RM	141	PB287122/AS
10855-K	101-54-2	N-Phenyl-p-Phenylenediamine	C02233	FEED	RM	82	PB285856/AS
10500-K	103-85-5	1-Phenyl-2-Thiourea	C02017	FEED	RM	148	PB287357/AS
10763-F	13171-21-6	Phosphamidon	C00588	FEED	RM	16	PB288800/AS
10937-H	13366-73-9	Photodieldrin	C00599	FEED	RM	17	PB274393/AS
10433-R	88-96-0	Phthalamide	C03612	FEED	RM	161	PB293831/AS
10421-A	85-44-9	Phthalic Anhydride	C03601	FEED	RM	159	PB293594/AS
10155-Y	1918-02-1	Picloram	C00237A	FEED	RM	23	PB276471/AS
10358-W	51-03-6	Piperonyl Butoxide	C02813	FEED	RM	120	PB288753/AS
10554-R	120-62-7	Piperonyl Sulfoxide	C02824	FEED	RM	124	PB288778/AS
10694-D	1955-45-9	Pivalolactone	C04126	GAV	RM	140	PB287645/AS
10936-E	53-03-2	Prednisone	C04897	IP/IJ	RM	a	JOURNAL ART
10612-G	366-70-1	Procarbazine	C01810A	IP/IJ	RM	a	JOURNAL ART
10612-G	366-70-1	Procarbazine	C01810B	IP/IJ	RM	19	PB299902/AS
10666-L	952-23-8	Proflavine	C04137	FEED	RM	5	PB268553/AS
10916-N	98-96-4	Pyrazinamide	C01785	FEED	RM	48	PB280251/AS

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10904-X	58-14-0	Pyrimethamine	C01683	FEED	RM	77	PB282608/AS
10502-T	105-11-3	p-Quinone Dioxime	C03850	FEED	RM	179	PB291501/AS
10355-J	50-55-5	Reserpine	C50157	FEED	RM	193	PB80/217920
10745-X	7446-34-6	Selenium Sulfide	C50033A	GAV	RM	194	
10745-X	7446-34-6	Selenium Sulfide	C50033B	SP	M	197	
10808-H	NOCAS0482	Selsun	C54546	SP	M	199	
10597-J	148-18-5	Sodium Diethyldithiocarbamate	C02835	FEED	RM	172	PB293833/AS
11244-D	18883-66-4	Streptozoticin	C03167	IP/IJ	RM	a	JOURNAL ART
10166-K	100-42-5	Styrene	C02200	GAV	RM	185	PB300977/AS
10452-D	95-06-7	Sulfallate	C00453	FEED	RM	115	PB286386/AS
10574-G	127-69-5	Sulfisoxazole	C50022	GAV	RM	138	PB288779/AS
10898-E	77-79-2	3-Sulfolene	C04557	GAV	RM	102	PB284656/AS
10392-E	72-54-8	TDE(Tetrachlorodiphenylethane)	C00475	FEED	RM	131	PB286367/AS
10157-G	1746-01-6	2,3,7,8 Tetrachloro-di-benzo-Dioxin	C03714B	SP	M	201	PB82163684
10915-J	79-34-5	1,1,2,2-Tetrachloroethane	C03554	GAV	RM	27	PB277453/AS
10176-T	127-18-4	Tetrachloroethylene	C04580A	GAV	RM	13	PB272940/AS
10705-R	2438-88-2	2,3,5,6-Tetrachloro-4-Nitroanisole	C03032	FEED	RM	114	PB287642/AS
10929-H	961-11-5	Tetrachlorvinphos	C00168	FEED	RM	33	PB278650/AS

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10291-V	97-77-8	Tetraethylthiuram Disulfide	C02959	FEED	RM	166	PB298514/AS
	789-61-7	Beta-TGDR(Beta-Thioguanidine deoxyribosi	C01581	IP/IJ	RM	57	PB281540/AS
	139-65-1	4,4'-Thiodianiline	C01707	FEED	RM	47	PB280360/AS
11109-K	52-24-4	Thio-TEPA(Triethylenethiophosphorotriami	C01649	IP/IJ	RM	58	PB285702/AS
10173-G	13463-67-7	Titanium Dioxide	C04240	FEED	RM	97	PB288780/AS
10928-E	1156-19-0	Tolazamide	C03327	FEED	RM	51	PB284610/AS
10927-A	64-77-7	Tolbutamide	C01763	FEED	RM	31	PB274483/AS
10768-A	15481-70-6	2,6-Toluenediamine Dihydrochloride	C50317	FEED	RM	200	PB80/217912
10736-T	6369-59-1	2,5-Toluenediamine Sulfate	C01832	FEED	RM	126	PB287127/AS
10654-W	636-21-5	o-Toluidine Hydrochloride	C02335	FEED	RM	153	PB290908/AS
10926-W	8001-35-2	Toxaphene	C00259	FEED	RM	37	PB292290/AS
10390-W	71-55-6	1,1,1-Trichloroethane	C04626A	GAV	RM	3	PB265082/AS
	79-00-5	1,1,2-Trichloroethane	C04579	GAV	RM	74	PB283337/AS
10175-P	79-01-6	Trichloroethylene	C04546A	GAV	RM	2	PB264122/AS
10925-S	75-69-4	Trichlorofluoromethane	C04637	GAV	RM	106	PB286187/AS
10430-E	88-06-2	2,4,6-Trichlorophenol	C02904	FEED	RM	155	PB293770/AS
10924-N	1582-09-8	Trifluralin	C00442	FEED	RM	34	PB278610/AS
10589-J	137-17-7	2,4,5-Trimethylaniline	C02299	FEED	RM	160	PB293802/AS

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	512-56-1	[a]Trimethylphosphate	C03781	FEED	RM	81	PB285851/AS
10708-D	2489-77-2	[a]Trimethylthiourea	C02186	FEED	RM	129	PB288802/AS
10406-E	76-87-9	[a]Triphenyltin Hydroxide	C00260	FEED	RM	139	PB287645/AS
10571-V	126-72-7	[a]Tris (2,3-Dibromopropyl) Phosphate	C03270	FEED	RM	76	PB280271/AS
10395-R	73-22-3	[a]l-Tryptophan	C01729	FEED	RM	71	PB285792/AS
	66-75-1	[a]Uracil Mustard	C04820	IP/IJ	RM	a	JOURNAL ART
	865-21-4	[a]Vinblastine	C04842	IP/IJ	RM	a	JOURNAL ART
	57-22-7	[a]Vincristine	C04864	IP/IJ	RM	a	JOURNAL ART

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METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

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Journal Articles

Harrison, B.R. Developing guidelines for working with antineoplastic drugs.
Am J Hosp Pharm 38, 1686-93, 1981.

The antineoplastic drugs are potentially hazardous and standards need to be set for problems associated with the admixture and injection of these substances. The literature on the subject is reviewed and the necessity of local guidelines emphasized.

Van Hoof, F. and Van San, M. Analysis of copper, zinc, cadmium and chromium in fish tissues. A tool for detecting metal-caused fish kills. *Chemosphere 10*, 1127-35, 1981.

In fish killed by toxic metals in a Belgian river, the concentration of metal in the gills was the most valuable indicator of lethal exposure. The authors point out that metal levels in gills and other tissues afford important information on the cause of the kill when combined with background information on metal levels in the water and normal levels in the tissues of the fish.

Alston, R.L. A batch staining method for brain slices allowing volume measurements of grey and white matter using an image analyzer (Guantimet 720).
Stain Technol 56, 207-13, 1981.

The analysis of the toxic effects of many compounds that act as demyelinating agents in the central nervous system depends upon the quantification of the loss of myelin. Therefore a rapid and comparatively simple method of demonstrating and quantifying the demyelination is a valuable tool in toxicology.

Sears, B., Yesair, D.W. Xenobiotic delivery vehicles and method of using them.
U.S. PATENT NO. 4298594 11/03/81 (Arthur D. Little Inc.)

The authors recommend the use of microreservoirs formed by phospholipids or cholesteryl esters with fatty acids or triglycerides. Their stability is greater than that of liposomes often used for the same purpose. Experimental data demonstrated that material delivered via such vehicles was less toxic than that injected directly. The material in the microreservoir was maintained longer in the blood stream and hence had less opportunity to injure liver, kidney, heart etc.

Sansone, E.B. et al. Assessment of environmental contamination associated with mammalian cell transformation assay.
In Vitro, 17, 810-5, 1981.

Sodium fluorescein, a fluorescent material judged to be noncarcinogenic, was dissolved in the culture media used to maintain early passage hamster embryo cells. The standard procedures of assay were followed. These procedures demonstrated that almost all, 99%, of contamination could be recovered from the inside of the glove box, the hood and disposable materials. The remaining 1% was traceable to intralaboratory transport of the chemical, treated cultures, and contaminated equipment. Present methods were therefore judged adequate for worker protection.

Frolova, A.D. et al. Use of indices of behavioral responses in a toxicological experiment.
GIG SANIT O, 53-57, 1980.

Two methods were compared (a modified open field method and the summation-threshold index registration method) to study the effects of organic and inorganic industrial chemicals. The simultaneous use of the two tests broadened the chance of detecting specific effects of a substance. A stimulating effect of the substance increases the sensitivity of the tests. On the other hand, in the absence of a narcotic effect, the open field method using the burrowing effect proved to be a sensitive index of a general toxic effect. This combination of tests can be of especial value during the establishment of threshold doses.

Wessely, P. and Mayr, N. EEG in phenytoin intoxication (author's translation.
EEG EMG 12, 142-7, 1981.

The possibility that the EEG can be used to identify and to follow the course of toxic conditions affecting the brain has been explored in four cases of phenytoin intoxication. The results of this study suggest that EEG studies would be of interest and might help in diagnosis of patients.

Merkur'eva, R.V. et al. Enzymatic disorganization of various subcellular structures under the effects of general toxicity and gonadotoxicity of chemical environmental factors.
ZDRAVOOKHR BELORUSS O, 28-29, 1980.

Induced toxic effects and gonadotoxic effects of chloroprene and Cr. Chloroprene were compared for their effects on lysosomes, endoplasmic reticulum, mitochondria, and cytosol, as well as on the state of body fluids. "The severity of the disturbances depended on intensity and length of exposure." There was a direct correlation between the activity of beta galactosidase and the functional state of the spermatozoa. The authors recommend the use of tests in the gonads and of the seminal fluid as early indicators of a gonadotoxic effect accompanied by analyses of blood serum as indicators of a general hepatotoxic effect.

Mechanisms of toxicity and hazard evaluation. Proceedings of the Second International Congress on Toxicology. Brussels, Belgium, July 6-11, 1980. *Dev Toxicol Environ Sci 8*, 1-665, 1980.

The proceedings contain the following papers of interest. Unfortunately, no abstracts are available, but the proceedings are available at the National Library of Medicine.

Davies, J.C. Regulatory issues in toxic substances control legislation.
Dev Toxicol Environ Sci 8, 428-39, 1980.

Astill, B.D. et al. Tier testing systems in toxicology and decision-making criteria for their use.
Dev Toxicol Environ Sci 8, 441-52, 1980.

Noel, P.R. Toxicity testing, hazard assessment and data quality assurance for chemical regulatory purposes.
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6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
Risk Assessment Study of Dimethylamine

INVESTIGATOR(S):
Craig S. Barrow, Ph.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Inhalation Toxicologist

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Chemical Industry Institute
of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:
Start Date: April 1981
End Date: April 1983
Annual Funding:

PROJECT SUMMARY:

The objective of this study is to establish the relative risk associated with chronic inhalation of dimethylamine. Two strains of animals, the Fischer 344 rat and the B6C3F1 mouse, are used. Three groups of animals, 95/sex/strain/concentration, are exposed to concentrations of 10, 50, or 175 ppm dimethylamine for 6 hours per day, 5 days per week for 24 months. A control group is exposed to clean air only on the same exposure regimen.

Interim evaluations are planned at six, twelve, and 18 month intervals, with final sacrifice of all remaining animals at 24 months. Evaluations for risk assessment include daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Dimethylamine 124-40-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Z. Gesamte Hyg. Ihre Grenzgeb.; VOL 26, ISS 4, 1980,258-9

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Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

Nitrobenzene: 90 day Inhalation Study in Rats and Mice

INVESTIGATOR(S):

Thomas Hamm, Jr., D.V.M., Ph.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Study Director

PERFORMING ORGANIZATION

Name and Address, Including Zip Code:

Chemical Industry Institute
of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:

Start Date: 1982
End Date: 1982
Annual Funding:

PROJECT SUMMARY:

The purpose of this study is to determine the effects of nitrobenzene in rats and mice when exposed by the inhalation route. Fischer 344 rats, CD rats, and B6C3F1 mice will be used. Four groups of animals, 10/sex/strain/concentration will be exposed to concentrations of 0, 5, 16, or 50 ppm nitrobenzene, 6 hours per day, 5 days per week for 90 days. At the conclusion of the study, risk assessment will be evaluated based on daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Nitrobenzene 98-95-3

TOX-TIPS APRIL 1982 71-29

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SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
Methyl Chloride Reproduction and Fertility Study in Fischer 344 Rats

INVESTIGATOR(S):
Thomas Hamm, Jr., D.V.M., Ph.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Study Director

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
Chemical Industry Institute
of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:
Start Date: 1982
End Date: 1983
Annual Funding:

PROJECT SUMMARY:

The objective of the reproduction and fertility study is to evaluate the effects of methyl chloride inhalation exposure to the male and female Fischer 344 reproductive systems and functions. This includes effects on postnatal development through three generations. The duration of the impairment, if one is found, and sexual assignment of lesion(s) (male and/or female) will also be investigated.

CAS Registry No.
Methyl chloride 74-87-3

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SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No:

PROJECT TITLE:

90 day Vapor Inhalation Toxicity Study on *n*-Hexane in Albino Rats

INVESTIGATOR(S):	DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
E. J. Gralla, VMD (CIIT)	Chief of Toxicology
Finis L. Cavender, Ph.D. (ToxiGenics)	Study Director

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
ToxiGenics, Inc.
1800 East Pershing Road
Decatur, Illinois 62526

PERIOD FOR THIS NRP:

Start Date: August 1980
End Date: November 1980
Annual Funding:

PROJECT SUMMARY:

This study was conducted to determine the subchronic toxicity of *n*-hexane vapors when animals were exposed for 6 hours per day, 5 days per week for a minimum of 90 days. Three groups of animals, 15 males and 15 females each, were exposed to concentrations of 3000, 6500, or 10,000 ppm *n*-hexane. The control group was exposed to clean air only.

At 90 days, evaluations included daily observations, body weights, clinical chemistries, gross necropsy observations, histopathological findings, and teased nerve fiber preparations.

CAS Registry No.
n-Hexane 110-54-3

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SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

90 day Vapor Inhalation Toxicity Study on Methyl Ethyl Ketone in Albino Rats

INVESTIGATOR(S):	DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
E. J. Gralla, VMD (CIIT)	Chief of Toxicology
Finis L. Cavender, Ph.D. (ToxiGenics)	Study Director

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
ToxiGenics, Inc.
1800 East Pershing Road
Decatur, Illinois 62526

PERIOD FOR THIS NRP:

Start Date: August 1980
End Date: November 1980
Annual Funding:

PROJECT SUMMARY:

This study was conducted to determine the subchronic toxicity of methyl ethyl ketone vapors when animals were exposed for 6 hours per day, 5 days per week for a minimum of 90 days. Three groups of animals, 15 male and 15 females each, were exposed to concentrations of 1250, 2500, or 5000 ppm methyl ethyl ketone. The control group was exposed to clean air only.

At 90 days, evaluations included daily observations, body weights, clinical chemistries, gross necropsy observations, histopathological findings, and teased nerve fiber preparations.

CAS Registry No.
Methyl ethyl ketone 78-93-3

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ULTRASTRUCTURAL STUDIES ON TOXIC EFFECTS IN LUNG TISSUE INDUCED BY INHALATION OF SOLVENTS
2ND INTERNATIONAL CONGRESS ON TOXICOLOGY, BRUSSELS, BELGIUM, JULY 6-11, 1980. TOXICOL LETTERS (AMST); 0 (SPEC. ISSUE 1). 1980. 45.

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SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

90 day Hydrogen Sulfide Vapor Inhalation Toxicity Study in Rats and Mice

INVESTIGATOR(S):	DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
James S. Bus, Ph.D. (CIIT)	Scientist
J. Michael Morgan, Ph.D. (ToxiGenics)	Senior Toxicologist

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
ToxiGenics, Inc.
1800 East Pershing Road
Decatur, Illinois 62526

PERIOD FOR THIS NRP:

Start Date: January 1982
End Date: April 1982
Annual Funding:

PROJECT SUMMARY:

The objective of this study is to obtain information on the subchronic toxicity of hydrogen sulfide via inhalation exposure. Three strains of animals, Fischer 344 rats, Sprague Dawley rats, and B6C3F1 mice, will be exposed to concentrations of 10, 30, or 80 ppm hydrogen sulfide for 6 hours per day, 5 days per week for a minimum of 90 days. Control animals will be exposed to clean air only. Evaluation will be made of daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Hydrogen sulfide 7783-06-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
90 day Carbon Disulfide Vapor Inhalation Toxicity Study in Rats and Mice

INVESTIGATOR(S):	DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
James S. Bus, Ph.D. (CIIT)	Scientist
M. Michael Morgan, Ph.D. (ToxiGenics)	Senior Toxicologist

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
ToxiGenics, Inc.
1800 East Pershing Road
Decatur, Illinois 62526

PERIOD FOR THIS NRP:
Start Date: February 1982
End Date: May 1982
Annual Funding:

PROJECT SUMMARY:

The objective of this study is to obtain information on the subchronic toxicity of carbon disulfide via inhalation exposure. Three strains of animals, Fischer 344 rats, Sprague Dawley rats, and B6C3F1 mice, will be exposed to concentrations of 50, 300, or 800 ppm carbon disulfide for 6 hours per day, 5 days per week for a minimum of 90 days. Control animals will be exposed to air only. Evaluation will be made of daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Carbon disulfide 75-15-0

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

Chronic Inhalation Toxicity Study on Chlorine in Rats and Non-Human Primates

INVESTIGATOR(S):	DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Craig S. Barrow, Ph.D. (CIIT)	Inhalation Toxicologist
Mr. Charles Ulrich (IRDC)	Director, Inhalation Toxicology

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
International Research and
Development Corporation
Mattawan, MI 49071

PERIOD FOR THIS NRP:

Start Date: October 1981
End Date: October 1983
Annual Funding:

PROJECT SUMMARY:

The objective of this study is to develop data in rats and monkeys on the chronic inhalation toxicity of chlorine and to assess in rats the carcinogenic potential when chlorine is administered via the inhalation route. The study design includes four groups consisting of 120 male and 120 female rats, and 4 male and 4 female monkeys each. Three groups will be exposed to chlorine concentrations of either 0.1, 0.5, or 2.5 ppm for 6 hours per day, 5 days per week for 24 months. The control group will be exposed to clean air only on the same exposure regimen.

Interim evaluations will be carried out at six, twelve, and eighteen months with the final sacrifice at 24 months. Evaluations at all time points include daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Chlorine 7782-50-5

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Department of Health and Human Services
Public Health Service, P.O. Box 12233
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: Interagency Agreement No. 222-Y01-ES-9-0043

PROJECT TITLE:

Evaluation of Pulmonary Function, Structure, Composition, and Other Endpoints After Exposure of Fischer-344 Rats to Silica Dust

INVESTIGATOR(S):

Robert T. Drew
Ray S. Kutzman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Inhalation Toxicology

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
Medical Department
Brookhaven National Laboratory
Upton, New York 11973

PERIOD FOR THIS NRP:

Start Date: February 1982
End Date: March 1983
Annual Funding:

PROJECT SUMMARY:

Fischer-344 rats will be exposed to filtered air or silica (MIN-U-SIL 5) at 2, 10, or 20 mg/m^3 (6 hrs/day, 5 days/wk) for 62 or 127 days. Endpoint assessment will be conducted on three subgroups of animals: (1) animals exposed for 62 days then assessed, (2) animals exposed for 127 days then assessed, and (3) animals exposed for 127 days and assessed 6 months after cessation of exposure.

The pulmonary mechanics of animals from each exposure group will be assessed at all three time points. Respiratory tissues from all animals which complete the pulmonary function tests will be examined for silica induced pathologic damage and for compositional changes. A full complement of tissues from additional animals in each chamber will be examined for histopathologic changes at all three time points.

After 127 days of exposure, cytogenetic damage will be assessed by scoring sister chromatid exchanges and chromosomal aberrations in selected cell populations. The reproductive potential of male and female rats will also be assessed after 127 days of MIN-U-SIL exposure.

CAS Registry No.
Silica 7631-86-9

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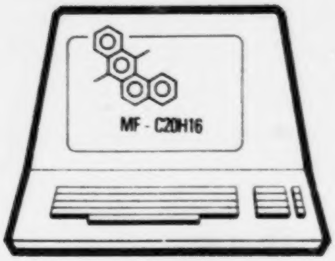

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TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

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FROM THE EDITOR

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The National Toxicology Program (NTP) Annual Plan for Fiscal Year 1982 is being distributed. If you have not received a copy, one may be requested from:

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The 249-page publication is dated March 1982, and carries document number NTP81-94.

Also released recently is the Second Annual Report on Carcinogens dated December 1981, and prepared by the NTP as document number NTP81-43. This publication is over 300 pages, including appendices, and may be obtained from the address shown above.

Carol B. Haberman
EDITOR, TOX-TIPS

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[illegible]

METHODS OF TESTING CHEMICALS FOF BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

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JOURNAL LITERATURE

Mason, M. F. Some realities and results of proficiency testing of laboratories performing toxicological analyses. *J. Anal Toxicol 5,* 201-8, 1981.

> Laboratories that work on a fee-for-service basis were evaluated for their ability to identify drugs in tissue samples and to determine values reported for the drugs

present. In spite of hints in the accompanying history, many laboratories were unable to establish the presence of the drug. Also, in a number of cases, the quantitative data did not fall within an acceptable range. The referee laboratories also reported values that ranged more widely than expected. The authors comment on possible ways of achieving more consistent results.

Tolbert, W. R., Feder, J. and Kimes, R. C. Large-scale rotating filter perfusion system for high-density growth of mammalian suspension cultures. *In Vitro 17,* 885-90, 1981.

This system has been developed for the growth and maintenance of suspension of mammalian cells in culture at high density. The ability to always provide adequate nutrients and to remove the waste products of cell metabolism makes it possible to maintain cultures of high density. Two to three times as many cells were obtained per liter of culture medium. Both the 4- and the 40-liter reactors have been successful without the use of antibiotics.

Rowan, A. N. LD50 test: critique and suggestions for alternatives. *Pharm Tech 5,* 64-66, 80, 82-86, 89-90, 92, 95, 1981.

The use of an approximate value instead of a quantitative value for the LD50 has been suggested to reduce animal suffering without sacrificing safety to human beings. The possible use of cell cultures and an emphasis on qualitative data even in active toxicity studies is discussed.

Salcman, M. Clinical hyperthermia trials: design principles and practice. *J Microwave Power 16,* 171-7, 1981.

The clinical evaluation of microwave and radiofrequency thermotherapy systems has frequently suffered from "... inadequate or inappropriate preclinical laboratory experimentation." Clinical trials should be so constructed that there is a minimum of contamination by other concurrent therapies. Human subjects must also be protected from unnecessary experimentation. "The ethical issues involved are best dealt with by good scientific design.

Ehrenberg, L. and Osterman-Golkar, S. Alkylation of macromolecules for detecting mutagenic agents. *Teratogenesis Carcinog Mutagen 1*, 105-27, 1980.

Experimental results with laboratory organisms are limited by "...difficulties of interpretation of negative results, in quantitation, and in extrapolation from experimental effects of chemicals to specific levels of activity in man". Epidemiological studies are plagued by "...long latency times, confounding environmental factors, imprecise endpoints, and high background levels". By studying the products of toxic agents reacting as electrophilic agents with nucleophilic centers in macromolecules from cells, it may be possible to evaluate in a more quantitative fashion the exposure to specific chemicals. The effects of an agent can be compared "...quantitatively to biologically well-characterized doses of radiation."

Kirpenko, Yu A. et al. Comparative evaluation of the toxic effect of biologically active substances of blue-green algae on cellular and body levels. *Gidrobiol Zh 15*, 91-94, 1979.

Algae of several different kinds were used to determine doses and effective concentrations for correlation between data of acute, subacute, and chronic tests on fibroblasts from rats and results obtained from cell cultures. "The cell culture technique may be used to identify toxicity of biologically active substances of general toxic character."

Speranskii, S. V. Simple method for evaluating hepatotropic and neurogenic effects in toxicological experiments. *Gig Sanit O*, 50-52, 1980.

Experiments were worked out so that by using varying doses of hexenal, mice were induced to sleep for a relatively constant length of time. Threshold of toxic effects using single i.m. injections were determined for five standard substances. This method was effective in the rapid evaluation of factors of chemical etiology and their ability to selectively affect the liver and nervous system.

Pomerantseva, M. D., Ramaiya, L. K., and Vilkina, G. A. Comparative efficacy of different tests for determining the mutagenicity of certain factors in mammals. 2. Frequency of abnormal sperm heads in mice exposed to various factors. *Sov Genet (Engl translation Genetika)*, 16, *882-885, 1980 (1981).*

Bone marrow cells were used to study the effects of various chemicals, high frequency microwaves, and cobalt-60 gamma rays. The chemicals caused mutations, and the microwaves and gamma waves caused chromosomal aberrations. Dominant lethal mutations as well as cytolytic and cytotoxic effects were present.

GOVERNMENT REPORTS

The full ordering information for these documents can be obtained from TOXLINE.

Thomas, R. et al Evaluation of short-term bioassays to predict functional impairment. Selected short-term hepatic toxicity tests. *Govt Reports Announcements & Index (GRA&I), Issue 3, 1982.*

The U.S. Army Medical Bioengineering Research and Development Laboratory requested the MITRE Corporation to evaluate short-term bioassays capable of predicting and assessing damage to the hepatic system due to short-term chemical exposure. The procedures used and the criteria for assessing them are discussed. Recommendations are made for a testing system for a chemical hepatotoxic screening program. The accompanying directory lists individuals and/or laboratories currently engaged in such projects, and the procedures used such as the anesthesia and terminal nature of the test. Compounds tested are also listed.

Interagency Regulatory Liaison Group, Washington, D.C. Recommended guideline for acute dermal toxicity test. *Govt Reports Announcements & Index (GRA&I), Issue 3, 1982.*

> "A test for acute dermal toxicity should evaluate the potential for systemic and local toxic effects of chemicals expected to come in contact with the skin. The acute dermal test refers to one period of topical application of up to 24 hours (the exposure period) and an observation period of at least 14 days."

Interagency Regulatory Liaison Group, Washington, D.C. Recommended guideline for acute eye irritation testing. *Govt Reports Announcements & Index (GRA&I), Issue 3, 1982.*

> "This guideline delineates the test procedures to evaluate the toxicity of liquids, solids, aerosols, and liquids propelled under pressure to ocular tissues of laboratory animals. The test should demonstrate the potential of a substance to produce injury to the human eye. For humane reasons, substances known to be corrosive may be assumed to be eye irritants and should not be tested in the eye. Furthermore, substances shown to be severe irritants in dermal toxicity tests may be assumed to be eye irritants and need not be tested in the eye."

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CONDENSED

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CHEMLINE DEFINED CHEMLINE (CHEMical Dictionary onLINE) is the National Library of Medicine's online, interactive chemical dictionary file created by the Specialized Information Services in collaboration with Chemical Abstracts Service (CAS). It provides a mechanism whereby over 500,000 chemical substances can be searched and retrieved online. This file contains CAS Registry Numbers; molecular formulas; CA chemical index nomenclature; generic and trivial names; and a locator designation which points to other files in the NLM system and the TSCA Inventory. In addition, where applicable, each CAS Registry Number record in CHEMLINE contains ring information including: number of component rings within a ring system, ring sizes, ring elemental compositions, and component line formulas.

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NCI C56291
and/or
Control No: NTP 10247-E

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Butyraldehyde

INVESTIGATOR(S):
For further information contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by the NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The butyraldehyde study is presently in the design stage.

CAS Registry No.
Butyraldehyde 123-72-8

TOX-TIPS MAY 1982 72-11

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61201
NTP No. 10283-V

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of o-Benzyl-p-Chlorophenol

INVESTIGATOR(S):
For further information contact:
Dr. L. Birnbaum
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code. Battelle Columbus Laboratory
Columbus, OH 43201

PERIOD FOR THIS NRP:
Start Date: July 1980
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The prechronic testing phase began January 1982. The chemical, o-benzyl-p-chlorophenol, is being administered to rats and mice by gavage.

CAS Registry No.
o-Benzyl-p-chlorophenol 120-32-1

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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wastewater as their pentafluorobenzoyl derivatives
Chemosphere; VOL 10, ISS 7, 1981,767-73

Schmahl HJ ; Matissek R
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nonemulsion-type cosmetics containing surfactants
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NOTICE OF RESEARCH PROJECT
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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No. and/or Control No.: NCI No. C61096
NTP No. 10286-G

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Acid Red 114

INVESTIGATOR(S):
For further information contact:
Dr. J. Mennear
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address Including Zip Code: Hazelton Laboratories
9200 Leesburg Pike
Vienna, VA 22180

PERIOD FOR THIS NRP:
Start Date: September 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Prechronic testing began March 1982. The chemical, C.I. Acid Red 114, is being administered to rats via the drinking water.

CAS Registry No.
C.I. Acid Red 114 6459-94-5

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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LYNN RK ; DONIELSON DW ; ILIAS AM ; KENNISH JM ; WONG K
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SUPPORTING ORGANIZATION: National Toxicology Program Department of Health and Human Services Public Health Service Research Triangle Park, NC 27709	SUPPORTING ORGANIZATION NUMBER(S): Contract No. and/or Control No.: NCI No. C61110 NTP No. 10288-P
PROJECT TITLE: Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Direct Blue 2	
INVESTIGATOR(S): For further information, contact:	DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION Technical Information Section National Toxicology Program Landow Building, 3A06 7910 Woodmont Avenue Bethesda, MD 20205
PERFORMING ORGANIZATION: Name and Address. Including Zip Code.	PERIOD FOR THIS NRP: Start Date: End Date: Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

This study has been deleted. NIEHS is conducting C.I. Direct Blue 6 and benzidine comparisons in a subchronic study.

CAS Registry No.
C.I. Direct Blue 2   2429-73-4

TOX-TIPS MAY 1982 72-17

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

LYNN RK ; DONIELSON DW ; ILIAS AM ; KENNISH JM ; WONG K
MATTHEWS HB
Metabolism of bisazobiphenyl dyes derived from benzidine, 3,3'-dimethylbenzidine or 3,3'-dimethoxybenzidine to carcinogenic aromatic amines in the dog and rat.
TOXICOL APPL PHARMACOL; 56 (2). 1980. 248-258.

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

NOTICE OF RESEARCH PROJECT

TOX-TIPS

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Services
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NCI No. C60877
NTP No. 10249-L

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Direct Blue 218

INVESTIGATOR(S):

For further information, contact:
Dr. J. Mennear
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
International Research and
Development Corporation
Mattawan, MI 49071

PERIOD FOR THIS NRP:

Start Date: September 1981

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Testing of C.I. Direct Blue 218 is planned through the prechronic phase. The chemical is administered to rats and mice via the feed. The prechronic phase was scheduled to begin during February 1982.

CAS Registry No.
C.I. Direct Blue 218 28407-37-6

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Elliott J ; Gregory AR
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Toxicology Research Projects Directory, Vol.06 iss.04 1981

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TOXICITY IN SHORT-TERM ALGAL ASSAYS
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SUPPORTING ORGANIZATION:
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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61132
NTP No. 10226-5

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Pigment Yellow 74

INVESTIGATOR(S):
For further information, contact:

Dr. W. Eastin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address,
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

C.I. Pigment Yellow 74 has been selected and assigned to Bioassay Program for carcinogenesis testing.

CAS Registry No.
C.I. Pigment Yellow 74 6358-31-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

NIOSH/EJ3645000
BUTANAMIDE,
2-((2-METHOXY-4-NITROPHENYL)AZO)-N-(2-METHOXYPHENYL)-3-OXO-
6358-31-2
TUMORIGEN
SELECTED BY NTP FOR CARCINOGENESIS BIOASSAY AS OF SEPT 1981
REPORTED IN EPA TSCA INVENTORY, 1980
C.I. 11741 ; C.I. PIGMENT YELLOW 74 ; DALAMAR YELLOW
HANSA BRILLANT YELLOW 5GX ; LUNA YELLOW ; NCI-C61132
PERMANENT YELLOW, LEAD FREE ; PONOLITH YELLOW Y
PIGMENT YELLOW 74
C18-H18-N4-O6
386.40
8201

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National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C56382A
NTP No. 10313-V

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Chloramine

INVESTIGATOR(S):

For further information, contact:

Dr. Carrie Whitmire
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
Tracor-Jitco Inc.
Rockville, MD 20853
and
Gulf South Research Institute
New Iberia, LA 70560

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Chloramine is being administered to rats and mice via the water. The study was scheduled to enter the chronic testing phase in March 1982. (See also TOX-TIPS October 1980, 53-21 and 53-22.)

CAS Registry No.
Chloramine 10599-90-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C60559
NTP No. 10192-T

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Chlorothen

INVESTIGATOR(S):
For further information, contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The study of chlorothen was cancelled January 1981 because of the compound's expense.

CAS Registry No.
Chlorothen 148-65-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C60913
NTP No. 10256-H

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of N,N-Dimethylformamide

INVESTIGATOR(S):
For further information, contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

A two-year study of n,n-dimethylformamide is planned under NIOSH management.

CAS Registry No.
N,N-Dimethylformamide 68-12-2

TOX-TIPS MAY 1982 72-27

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61143
NTP No. 10236-5

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Manganese Sulfate

INVESTIGATOR(S):
For further information, contact:

Dr. D. Walters
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
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National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code. Gulf South Research Institute
New Iberia, LA 70560

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Manganese sulfate is being administered to rats and mice via their feed. Prechronic testing began during March 1982.

CAS Registry No.
Manganese sulfate 7785-87-7

TOX-TIPS MAY 1982 72-29

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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76TH ANNUAL MEETING OF THE AMERICAN LUNG ASSOCIATION, 75TH ANNUAL
MEETING OF THE AMERICAN THORACIC SOCIETY, 68TH ANNUAL MEETING OF
THE CONGRESS OF LUNG ASSOCIATION STAFF, WASHINGTON, D.C., USA,
MAY 18-21, 1980. AM REV RESPIR DIS; 121 (4 PART 2). 1980. 254.

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. 60720B
NTP No. 10203-G

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Methdilazine

INVESTIGATOR(S):
For further information, contact:

Dr. D. Goldman
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address Including Zip Code. Litton Bionetics, Inc.
Kensington, MD 20895

PERIOD FOR THIS NRP:
Start Date: September 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Methdilazine is being administered to rats and mice via their feed. The chemical has been assigned to the contractor for study.

CAS Registry No.
Methdilazine 1982-37-2

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NCI No. C56280
and/or Control No: NTP No. 10266-R

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Methylphenidate

INVESTIGATOR(S):

For further information, contact:

Dr. W. Kouwe,
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address Including Zip Code:
Hazelton Raltec Inc.
P.O. Box 7545
Madison, WI 53704

PERIOD FOR THIS NRP:

Start Date: September 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Methylphenidate is being administered to rats and mice via their feed. Prechronic testing is expected to begin in late summer 1982.

CAS Registry No.
Methlyphenidate 113-45-1

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

Performing Organization

Enter name of organization where work is actually being done.

Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

Project Summary

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

Send All Notices of Research Projects Directly To:

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NOTICE OF RESEARCH PROJECT

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SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

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INVESTIGATOR(S):

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PERFORMING ORGANIZATION:

Name and Address.
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PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

Before completing this form, please see reverse side for instructions.

INSTRUCTIONS FOR FILLING IN THE FORM

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Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

Performing Organization

Enter name of organization where work is actually being done.

Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

Project Summary

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

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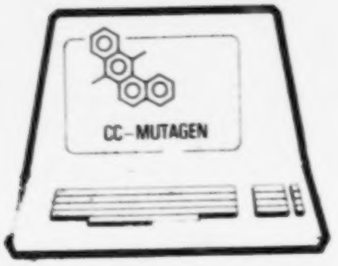

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RTECS
REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES
CONDENSED

Bethesda, Maryland 20209

RTECS DEFINED

RTECS (Registry of Toxic Effects of Chemical Substances) is in the National Library of Medicine's online version of the National Institute for Occupational Safety and Health's (NIOSH) annual compilation of substances with toxic action. The original collection of data that makes up RTECS was known as the Toxic Substances List, compiled in 1971 by NIOSH in response to the Occupational Safety and Health Act of 1970. The hard copy version of RTECS is updated annually with quarterly microfiche editions available. NIOSH is responsible for the file content in RTECS, and for providing quarterly updates to NLM. RTECS currently contains toxicity data for more than 50,000 substances (1/82).

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability.

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RTECS is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

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RTECS is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 5:00 P.M. (Eastern Time.)

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Bethesda, Md. 20209
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TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

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Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

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TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

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FROM THE EDITOR

Dear Colleague:

An indexed list of laboratories that conduct tests for chemical mutagenicity has been compiled at the National Institute of Environmental Health Sciences. Released April 1982, the booklet contains names and addresses of thirty-six laboratories, organized into three sections:

Testing Laboratory Index, alphabetical by laboratory name

Geographical Index, alphabetical by state

Assay System Index, roughly phylogenetic

To obtain a free copy, address your request to:

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Carol B. Haberman

EDITOR, TOX-TIPS

METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

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National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

JOURNAL LITERATURE

Langolf, G., Henderson, R. and Whittle, H. Sensitive tests for detection of neurotoxic effects. Meeting on chemical indices and mechanisms of organ-directed toxicity, Barcelona, Spain. March 4-7, 1981. *Gen. Pharmacol, 12, 1981.*

Bodor, N., Farag, H. H., Brewster, M. E. II. Site-specific, sustained releases of drugs to the brain. *Science. 214, 1370-2, 1981.*

> The method described is a general and flexible one for site specific and/or sustained delivery of drugs to the brain. The use of a dihydropyridine carrier linked to the compound being studied makes it possible for that compound to pass the blood-brain barrier with ease. The oxidation of the carrier portion of the linked molecule accelerates its elimination from the body and prevents its loss from the brain. As the carrier portion of the molucule is cleaved from the test compound, the carrier is eliminated and the test substance delivered to the brain in a sustained fashion.

Turner, C. J. Toxin-induced inhibition of nerve terminal growth. *Neurotoxicology 2, 313-27, 1981.*

> The inhibition of nerve growth by a number of toxic substances has been studied by use of an *in-vivo* model. Nerve growth at the terminal was measured and the nerve growth subsequent to nerve crush evaluated. The model can detect and quantify "...30%-100% inhibition of nerve terminal growth." The length of time required to carry out the test is its major disadvantage. The author discusses ways to measure density of the developing innervation which is the principal time consuming factor.

Herrmann, W. M. Some examples for the possibilities and limitations of pharmacoelectroencephalography as a method in clinical pharmacology. *Methods Find Exp Clin Pharmacol 3, 55S-76S, 1981.*

> "Pharmacoelectroencephalography is a new methodology using clinical pharmacological research design and the methodlolgy of electroencephalography and its parametrisation by computer analysis." The development of this methodology, if it can be shown to be sensitive, offers a possible new method for research in clinical toxicology with special emphasis on neurotoxicology.

Sorsa, M. Use of prognostic mutagenicity tests in assessing the delayed toxic effects of chemical substances. *Gig Tr Prof Zabol* Jan;(1): 38-41, 1982.

Vainio, H. Reversible and irreversible effects: the basis for detecting the mechanisms of toxicity and establishing standards. *Gig Tr Prof Zabol* Jan;(1): 44-6, 1982.

An IARC appraisal of carcinogenicity testing (news) *Food Cosmet Toxicol* Dec; 19(6): 783-5, 1981.

Bishop, J. B. and Kodell, R. L. The heritable translocation assay: its relationship to assessment of genetic risk for future generations. *Teratogenesis Carcinog Mutagen 1*, 305-32, 1980.

> "The Heritable Translocation Assay (HTA) is an *in vivo* mammalian mutation test which measures specific clastogenic damage." The results of the test can be subjected to rigorous statistical analysis. At the same time this test measures damage "... that is known to contribute to the human burden of disease". The authors point out that although tests for translocation have been developed and improved over the past forty years, the HTA has certain advantages. They discuss the statistical analysis of data obtained by this test and suggest a simplified method of extrapolating the results to man. Other developmental needs of this assay and the perspectives for its application to "..regulatory assessment of environmental mutagens" are also described.

Adler, I. D. New approaches to mutagenicity studies in animals for carcinogenic and mutagenic agents. I. Modification of the heritable translocation test. *Teratogenesis Carcinog Mutagen 1*, 75-86, 1980.

The modified translocation test includes females as well as males. However, extra time and labor are necessary to determine the female translocation carriers. If only males are used, the test is not only faster but also more reliable.

Nistiar, F. and Hrusovsky, J., and Benes, J. Use of the protozoan Tetrahymena pyriformis in testing for contamination of biological materials with organophosphates and carbamates. *Vet Med (Praha) 26,* 685-700, 1981.

Media consisting of 1% protease-peptone with 0.2% yeast extract was used for slant culture of the protozoan Tetrahymena pyriformis. High cell densities were obtained under cultivation in Roux flasks. Cell numbers were obtained by direct counting in Fuchs-Rosenthal chambers.

Butcher, R. E., Wootten, V. and Vorhees, C. V. Standards in behavioral teratology testing: test variability and sensitivity. *Teratogenesis Carcinog Mutagen 1,* 48-61, 1980.

In the authors experience, the use of tests having an intermediate level of variability are most likely to reveal information about the behavioral teratogenic potential of a compound. One study with brominated vegetable oil showed that the postweaning tests had approximately twice the variability of preweaning ones. Therefore a lack of effect of the test substance on the postweaning tests could not be interpreted with any surety since these tests had a lower sensitivity. "An acceptable standard for future behavioral teratology screening requires a close examination of test variability, as it appears to be an important element in the sensitivity and, hence, the interpretation of such procedures."

Colburn, N. H., Koehler, B. A. and Nelson, K. J. A cell culture assay for tumor-promotor-dependent progression toward neoplastic phenotype: detection of tumor promotors and promotion inhibitors. *Teratogenesis Carcinog Mutagen: 1,* 87-96, 1980.

If anchorage independence is taken as an *in vitro* marker of neoplastic phenotype, then this characteristic can be used to separate the effects of tumor-promoting from non-promoting phorbol esters. The anchorage-independence test is affected by substances known to be tumor inhibiting *in vivo*. "Both retinoid inhibition and clonal heterogeneity for promotor response are being utilized to study determinants of preneoplastic progression."

Namba, M. and Kimoto, T. Culture conditions for a human lymphoma line (Raji) and their application to mutation research. *Gan:* 72, 459-63, 1981.

Under the cultural conditions described, cells could be seeded into a soft agar medium containing 6-thioguanine (6-TG) and used to detect a forward mutation without metabolic cooperation. Optimal expression time was determined using ethyl methanesulfonate. "A significant increase of mutation frequency was observed approximately 10 days after the 6-TG treatment, by which time the cells had gone through about 10 population doublings."

GOVERNMENT REPORTS

Full citations and ordering numbers can be obtained from TOXLINE.

Lakings, D. B. and Gan, O. Identification or development of chemical analysis methods for plants and animal tissues. *Govt Reports Announcements & Index (GRA&I)*, Issue 6, 1981.

These methods deal with the identification and analysis of munition compounds such as trinitrotoluene in bioligical matrices.

Soliman, S. A., Curley, A. and El-Sebae. A direct method to assay neurotoxic esterase activity. *Govt Reports Announcements & Index (GRA&I)*, Issue 9, 1982.

> A photometric method for the direct assay of neurotoxic esterase in the microsomal fraction of chicken brain has been developed.

Anon. Advisory Committee on Health-Related Effects of Herbicides: Transcript of Proceedings (Fourth Meeting, April 23, 1980). *Govt Reports Announcements & Index (GRA&I)*, Issue 7, 1982.

> This meeting contains reports on the effects of Agent Orange and "...scientific experiments being conducted to determine the Agent's possible effects on Vietnam veterans".

FEDERAL REGISTER

Environmental Protection Agency (EPA). Changes in test standards policy and test rules development process. *Federal Register 47*, No. 59, 13012-13014, March 28, 1982.

> This notice explains that EPA will issue "...generic test methodology guidelines rather than generic test methodology requirements. Under the new policy, draft test protocols for individual test rules will be submitted by test sponsors and the Agency will adopt final protocols after opportunity for public comment."

Environmental Protection Agency (EPA). Dichloromethane, nitrobenzene, and 1,1,1-trichloroethane changes in test rules policy. *Federal Register 47*, No. 59, 13012, March 28, 1982.

> "This notice announces that EPA is implementing these changes in policy (see Federal Register of June 5, 1981, Vol. 46, 30300) and procedure for dichloromethane, nitrobenzene, and 1,1,1-trichloroethane proposed test rules."

Environmental Protection Agency Publications

Falahee, K. J., Rose, C. S., Olin, S. S. and Selfried, H. E. Eye irritation testing. Assessment of methods and guidelines for testing materials for eye irritancy. Assessment Division, Office of Toxic Substances, Washington, D.C. 20460. EPA-560/11-82-0011, October 1981.

TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

ORGANIZATION—Sponsored by Toxicology Information Program National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

PERSONNEL—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

INFORMATION RESOURCES—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

SEARCH REQUEST INFORMATION—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

SEARCH COMPLETION TIME—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

INFORMATION SERVICES—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

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SUPPORTING ORGANIZATION:
U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:
Coal Gasification Program: Inhalation Toxicity of Airborne Effluents

INVESTIGATOR(S):
Roger O. McClellan, D.V.M., Director

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Inhalation Toxicology Research
Institute
Lovelace Biomedical and Environmental Research Institute
Albuquerque, NM 87185

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Inhalation Toxicology Research
Institute
and
Morgantown Energy Technology Center
Morgantown, WV

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

The primary objective of the Coal Gasification Program is to obtain information on the possible inhalation toxicity of airborne effluents associated with coal gasification to allow a more accurate assessment of the health risk to man.

The program has benefited greatly from a cooperative effort with the Morgantown Energy Technology Center (METC), Morgantown, WV. Since June 1977, process stream material, effluent waste, and combustion products have been sampled during operation of the METC gasifier with various combinations of cleanup devices. Sampling at points along the process stream allowed evaluation of the efficiency of the control devices used and assessment of the risk associated with potential fugitive emissions. Sampling of the waste effluents provides information on the risk associated with handling of material during waste disposal, while sampling of combustion products indicates the type of materials that may be emitted to the environment and result in exposure of the general population. All samples are characterized physically and chemically and their biological activities (cytotoxicity and mutagenicity) are monitored. Chemical fractionation is used to concentrate and identify classes of compounds with the most biological activity. The sampling effort also provides bulk samples for laboratory-based inhalation toxicity studies.

A multitiered approach for toxicological evaluation of gasifier effluent is used in which samples from the METC gasifier are screened for cytotoxicity and mutagenicity in a battery of tests *in vitro* and the most biologically active samples are further characterized by more in-depth toxicological studies *in-vivo*. Bacterial and mammalian cell mutagenicity tests and alveolar macrophage cytotoxicity tests are used and additional methods for toxicological evaluation are being developed. These include isolation and culture of specific cell types or tissues from the respiratory tract for use in toxicity testing. Some compounds are tested in both *in vitro* and *in vivo* systems for a direct comparison between responses observed *in vitro* and those observed in the whole animal.

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Gajdos LV
ENVIRONMENTAL ANALYSIS OF COAL CONVERSION PROCESSES
Toxicology Research Projects Directory, Vol.07 iss.02 1981

Hinton DE
EFFECTS OF EFFLUENTS OF COAL COMBUSTION AND GASIFICATION UPON LUNG STRUCTURE AND FUNCTION
Toxicology Research Projects Directory, Vol.07 iss.02 1981

Headley L
HEALTH EFFECTS OF COAL PARTICULATES
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Hatch FT
TOXICOLOGY OF COAL GASIFICATION
Toxicology Research Projects Directory, Vol.06 iss.12 1981

Carpenter RL
LOW BTU GASIFIER BIOLOGICAL CHARACTERIZATION OF FIELD COLLECTED EFFLUENTS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Headley H
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Toxicology Research Projects Directory, Vol.07 iss.01 1981

Raabe C
COAL--OIL MIXTURES TOXICOLOGY
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Headley L
TOXICOLOGICAL COAL ASSESSMENT
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Anon
Effects of Coal Combustion and Gasification Upon Lung Structure and Function. Quarterly Progress Report, March 12, 1981
Govt Reports Announcements & Index (GRA&I), Issue 25, 1981

Fry RJ ; Holland JM ; Witschi HP
ANIMAL TOXICOLOGY STUDIES OF EFFLUENTS FROM LOW-BTU GASIFIERS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Brooks AL ; Mitchell CE ; Hanson RL ; Benson JM
CYTOGENETIC STUDIES OF LUNG CELLS FOLLOWING INHALATION OF FLY ASH, CHEMICAL MUTAGENS AND EFFLUENTS FROM POWER-RELATED INDUSTRY
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Weisman S
INHALATION TOXICITY OF ORGANOMETALS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Reilly CA
TOXICOLOGY OF COAL COMBUSTION EFFLUENTS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

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SUPPORTING ORGANIZATION:

U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:

Coal Combustion Emissions Toxicology Program

INVESTIGATOR(S):

Roger O. McClellan, D.V.M., Director

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Inhalation Toxicology Research
Institute
Lovelace Biomedical and Environmental Research Institute
Albuquerque, NM 87185

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:

Inhalation Toxicology Research
Institute
and
Morgantown Energy Technology Center
Morgantown, WV

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

The direct combustion of coal could increase markedly as one option for meeting our energy needs. The fluidized bed combustion (FBC) of coal is a developing technology for the direct combustion of coal as an alternative to the more conventional methods of pulverized coal combustion (PCC). Emissions of hydrocarbons and particulates for the two technologies have not been adequately compared.

Studies have been developed over the past four years to provide a basis for determining the potential health risks to man from the FBC of coal. An important aspect of the effort has been developing comparable data for PCC. A major aspect of this program has been a collaborative effort with the Morgantown Energy Technology Center (METC) at Morgantown, WV, to physically and chemically characterize potential emissions from the FBC of coal by utilizing the 18-inch experimental FBC being operated at METC.

The strategy of the program has been to obtain information on the physical and chemical characteristics of airborne material at various locations in the FBC and PCC process streams as an indicator or potential fugitive emissions to which workers may be exposed or potential environmental emissions that may result in exposure of the general population.

The major emphasis of the program is to determine the potential toxicological effects of emissions from FBC, especially as compared to PCC. A multitiered approach is being used. This consists of a series of relatively rapid *in vitro* and *in vivo* screening tests for cytotoxicity or mutagenicity. These screening tests are followed by inhalation studies to determine the retention and distribution of the inhaled materials. A limited number of materials is then selected for chronic inhalation studies which may extend for the life span of the animal to establish dose-response relationships for late-occurring diseases. With this approach, it is anticipated that the number of materials on which extensive toxicological testing is done will be reduced.

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NOTICE OF RESEARCH PROJECT

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U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:
Diesel Technology Toxicology Program

INVESTIGATOR(S):
Roger O. McClellan, D.V.M., Director

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Inhalation Toxicology Research Institute
Lovelace Biomedical and Environmental Research Institute
Albuquerque, NM 87185

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code. Inhalation Toxicology Research Institute and others

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

Diesels compared to spark-ignition engines at the present state of technology emit larger concentrations of particulate material consisting of very small chain aggregates of porous, carbonaceous particles with varying amounts of adsorbed hydrocarbons. The amount of particulates emitted and the chemical characteristics of the hydrocarbons differ with the engine and fuel types and operating conditions. The particle size is readily inhaled and deposited within the lung. The associated hydrocarbons have been shown to contain chemical species acting as potent mutagens in bacterial screening assays and carcinogens when painted on the skin of mice. In addition to particles, diesel exhaust also contains irritants, oxidants, and hydrocarbons in the vapor phase. These materials have been shown to contribute to the development of chronic lung diseases when inhaled.

The multifaceted program, for which ITRI is the lead laboratory, is directed toward developing information on diesel exhaust characteristics, the nature of atmosphere containing exhaust to which various populations might be exposed, the deposition and fate of inhaled particulates, the effective doses of toxic materials reaching sensitive tissues, and the integrated adverse health effects from long-term inhalation of diluted exhaust. Various domestic and foreign laboratories and other organizations are involved in the projects.

A large number of particulate samples collected both at ITRI and the various other laboratories are being characterized physically and chemically, and these characteristics are related back to engine types and operating conditions. A long-term study of animals exposed to diesel exhaust is being carried out. Finally, information resulting from these related projects is combined as input into models for predicting health risks among human populations.

CAS Registry No.

Diesel test fuel	68512-90-3
No. 2 Diesel fuel	68476-34-6
Diesel oil (petroleum)	68334-30-5

TOX-TIPS JUNE 1982 73-17

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SUPPORTING ORGANIZATION:
U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:
Nuclear Energy Toxicology Program: Aerosol Characterization Studies

INVESTIGATOR(S):
Roger O. McClellan, D.V.M.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Inhalation Toxicology Research Institute
Lovelace Biomedical and Environmental Research Institute

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code: Inhalation Toxicology Research Institute
Albuquerque, NM 87185

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

This program addresses broadly the inhalation toxicology of radionuclides associated with current and developing nuclear fuel cycles. Prime emphasis is being placed on the elucidation of relationships between the dose to and within critical organs and the development of long-term biological effects since both dose and effects are critical elements in risk assessments for different nuclear operations.

Aerosol characterization studies are conducted by sampling at different nuclear industrial plants and by more extensive laboratory studies. Animal studies are designed and conducted to use these laboratory-produced aerosols to determine the effects of specific physical, chemical, and biological factors on the deposition and retention of inhaled radionuclides and the resulting doses to different organs. In studies of this type, the animals are serially sacrificed at different intervals after the inhalation exposure. Samples taken at necropsy are used to estimate the absorbed dose to local areas within organs as well as at the whole organ level.

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NUCLEAR ENERGY TOXICOLOGY PROGRAM
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Toxicology Research Projects Directory, Vol.07 iss.01 1981

SUPPORTING ORGANIZATION:
U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:
Nuclear Energy Toxicology Program: Dose-Response Studies

INVESTIGATOR(S):
Roger O. McClellan, D.V.M.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Inhalation Toxicology Research Institute
Lovelace Biomedical and Environmental Research Institute

PERFORMING ORGANIZATION:
Name and Address Including Zip Code: Inhalation Toxicology Research Institute
Albuquerque, NM 87185

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

Dose response studies form the core of the nuclear program and involve two main groups of studies dealing with beta-gamma- or alpha-emitting radionuclides. Studies with dogs exposed to beta-gamma-emitting radionuclides have been in progress for up to 16 years. The most prevalent effect has been cancer in the organs most heavily irradiated. In the corresponding dose-response studies with animals exposed to alpha-emitting radionuclides, emphasis is being placed on the effects of particle size, number, and activity on the resulting biological effects. The occurrence of acute effects (radiation pneumonitis and pulmonary fibrosis) seen to date in the dogs exposed to monodisperse aerosols of $^{238}PuO_2$ appears to be lower than predicted from existing data from dogs exposed to monodisperse or polydisperse aerosols of $^{239}PuO_2$.

In addition to the use of rodents and dogs, a limited number of monkeys have been exposed to aerosols of $^{239}PuO_2$ or $^{239}Pu(NO_3)_4$ to study the metabolism and dosimetry of inhaled ^{239}Pu in a nonhuman primate. Results of these studies are providing a strong link between our studies in other species of laboratory animals and the expected results in exposed people.

Heavy emphasis has been placed within this program on the behavior and biological effects of radionuclides in a single, brief exposure such as might occur from an accidental, onetime release. Another group of studies is being conducted in rodents and dogs to address the possible influence of repeated inhalation exposures to beta-gamma- or alpha-emitting radionuclides on the resulting patterns of dose and biological effects.

CAS Registry No.
Plutonium-238 dioxide 12266-32-9
Plutonium-239 dioxide 22840-34-2
Plutonium-239 tetranitrate 13968-56-4

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McClellan RO
NUCLEAR ENERGY TOXICOLOGY PROGRAM
Toxicology Research Projects Directory, Vol.06 iss.12 1981

Muggenburg BA ; Mewhinney JA ; Hahn FF
TOXICITY OF INHALED ALPHA-EMITTING RADIONUCLIDES
Toxicology Research Projects Directory, Vol.06 iss.04 1981

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C60786
NTP No. 10217-F

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of p-Nitroaniline

INVESTIGATOR(S):
For further information, contact:
Technical Information Section

Dr. R. Chhabra

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
Hazelton Raltec Inc.
P.O. Box 7545
Madison, WI 53704

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

P-nitroaniline has been committed to testing through the prechronic phase. Prechronic testing is scheduled to begin during April 1982. The compound will be administered to mice by gavage.

CAS Registry No.
p-Nitroaniline 100-01-6

TOX-TIPS JUNE 1982 73-23

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Report; ISS NIOSH-80-122; Order No. PB81-223422,, 1980,21 pp.

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C60786
NTP No. 10211-G

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of o-Nitroanisole

INVESTIGATOR(S):
For further information, contact:
Technical Information Section

Dr. R. Chhabra

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address Including Zip Code:
Hazelton Raltec Inc.
P.O. Box 7545
Madison, WI 53704

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

O-nitroanisole will be tested through the prechronic phase. Prechronic studies began in December 1981. The compound is administered to rats and mice in the feed.

CAS Registry No.
o-Nitroanisole 91-23-6

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61212
NTP No. 10144-L

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Nitrotoluene

INVESTIGATOR(S):
For further information, contact:
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION
Name and Address Including Zip Code

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Nitrotoluene was not selected for testing by NTP.

CAS Registry No.
Nitrotoluene (undefined mixture) 1321-12-6

TOX-TIPS JUNE 1982 73-27

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NOTICE OF RESEARCH PROJECT
TOX-TIPS

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NCI No. C60219
NTP No. 10191-P

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Phosgene

INVESTIGATOR(S):

For further information, contact:
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DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

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Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

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Plans for testing of phosgene were withdrawn in June 1981 because of safety concerns.

CAS Registry No.
Phosgene 75-44-5

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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C60673
NTP No. 10202-D

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Promethazine

INVESTIGATOR(S):
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Litton Bionetics, Inc.
5516 Nicholson Lane
Kensington, MD 20895

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Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

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Promethazine will be tested through the prechronic phase. Prechronic studies in rats and mice began in December 1981. The compound was administered by gavage.

CAS Registry No.
Promethazine 60-87-7

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QUARTERLY INDEX OF COMPOUNDS

This quarterly index lists compounds under test and those for which tests have been completed and published. The index will be updated and reprinted in the September, 1982 issue. Citations for compounds announced as under test give the issue number and page for TOX-TIPS. Those for which testing has been completed and published cite the journal or other report in which test data can be found.

National Toxicology Program/National Cancer Institute Bioassay Reports may be ordered from the National Technical Information Service, Springfield, Virginia 22161, using the PB-number cited.

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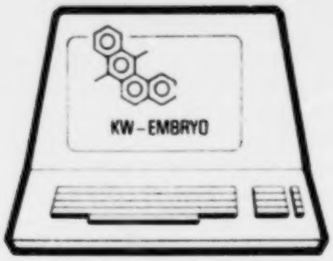

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TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

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FROM THE EDITOR

The 1980 printed version of the NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) is now available. This publication supersedes all previous printed editions of the Registry. Order the new RTECS from:

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The Registry is a compendium of toxicity data extracted from the scientific literature. It also includes references to existing Federal standards for each substance as well as to testing programs under which the chemical is being evaluated. There is also a computerized version of this information, and this RTECS database is available from the National Library of Medicine as part of the MEDLARS system. Please see the inside back cover of this issue for a more complete desciption of the RTECS online version. For additional information regarding access to the database, contact

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National Library of Medicine
8600 Rockville Pike
Bethesda, MD 20209
Telephone (301)496-6193

Carol B. Haberman

EDITOR, TOX-TIPS

METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

JOURNAL REFERENCES

Kast, A. and Nishikawa, J. The effect of fasting on oral acute toxicity of rats and mice. *Lab Anim. 15*, 359-64, 1981.

The oral toxicity of drugs was determined in rats allowed to feed ad libitum and in rats of the same age and strain fasted for 17-20 hr. In the case of the three beta-adrenergic stimulants tested, toxicity was increased 1.3-4.7 times by fasting. This effect was believed to be due to "...accelerated gastric emptying and intestinal absorption..." in the fasted rats since the toxicity of i.p drugs was the same in fasted and fed rats.

Strubelt, O. et al. Influence of fasting on the susceptibility of mice to hepatotoxic injury. *Toxicol Appl Pharmacol 60* 66-77, 1981.

Hepatotoxic effects of drugs were followed by monitoring the serum levels of glutamic oxaloacetic transaminase (GOT), glutamic pyruvic transaminase (GPT) and sorbitol dehydrogenases (SDH) in the serum from "...normally fed and 24-h-fasted mice". Toxicity was increased in the fasted animals. Depletion of liver glycogen and GSH and accumulation of lipid in the liver are among the factors that must be considered responsible for the difference in toxicity. Since overnight fasting may change the toxic effects of drugs upon the liver, it should be avoided.

Sunderman, F. W. Jr. Biochemical indices of renal toxicity. Meeting on chemical indices and mechanisms of organ-directed toxicity, Barcelona, Spain, March 4-7, 1981. *Gen Pharmacol 12,* 1981.

Among the topics discussed were caffeine, phenacetin, gentamicin, cadmium, and nickel toxicities, urine creatinine, heme oxygenase, beta-n acetyl glucosaminidase, beta-2 microglobulin, smoking, occupational health and environmental toxicity.

Cook, T. H. Profilometry of skin...useful tool for the substantiation of cosmetic efficacy. *J Soc Cosmet Chem 31,* 339-359, 1980.

Profilometry, a method of evaluating surface texture to obtain quantitative measures of the surface texture of the horny layer of skin, is reviewed. Instruments used, replication methods, roughness parameters and methods of evaluating the data are all considered. Such techniques could also be applied to some studies of skin toxicity.

Berezina, O. V. and Goev, A. A. Evaluation of heavy metal toxicity by a behavioral method. *Gig Sanit (1)*, 42-46, 1982.

Kurokawa, M., Iwamoto, H. and Hasegawa, I. KI-chamber patch test unit. *J Soc Cosmet Chem 31*, 97-104, 1980.

Results of comparing the KI-unit with Al-test and the Finn chamber in testing the responses of volunteers to skin irritants suggest that the KI-unit is a useful device for testing skin irritation and allergic responses.

Olson, J. Some methodologic problems encountered in occupational health research. *Scand J. Soc Med 9*, 19-24, 1981.

The proper interpretation of studies in occupational health research is hampered by a number of sources of error which are not always fully considered in designing the study. Bias may be of particular importance in the selection of healthy workers, in information gathering, and in the differential distribution of health services in the workplace. Also of importance is a knowledge of how the diseases have been diagnosed.

Minkina, N. A. et al. Possibility of predicting indirect consequences of the effect of harmful chemical substances upon the organism. *Aktual'n Probl Gigienich Toksikol* 73-79, 1980.

Subjects considered were evaluation of carcinogens, mutagens, embryotoxic chemicals, gonadotoxical chemicals, and chemical toxicity in general.

Hatakeyama, S. and Yasuno, M. A method for assessing chronic effects of toxic substances on the midge Paratanytarsus parthenogeneticus --effects of copper. *Arch Environ Contam Toxicol 10*, 705-13, 1981.

> Copper was used as the test substance in studying the chronic effects of a poison on midge larva. Growth, amount of food taken up, and reproductive ability were all affected. The first two factors were inversely related to the copper content and 50% reproductive impairment occurred at copper contents greater than 0.37 mg/.

Ware, G. S., Parrish, P. R. and Risby, R. A. Early life stage toxicity with a saltwater fish: effects of eight chemicals on survival, growth and development of sheepshead minnows (Cyprinodon variegatus). *J Toxicol Environ Health 8*, 225-40, 1981

> Toxicity tests of the chemical effects on survival, growth, and development were determined in flow-through, acute (96h), and early life stages of sheepshead minnows. Six chemicals were used and these results compared with those obtained previously with the same chemicals on six species of aquatic organisms.

Alarie, Y. Dose-response analysis in animal studies: prediction of human responses. *Environ Health Perspect 42*, 8-13, 1981.

> A group of airborne chemicals which irritate the upper respiratory tract was assayed for their effects in animals. The results were used to rank the potency of the chemicals and to predict a safe level of exposure for human beings. These safe levels correlated well with the current Threshold Limit Values published for these compounds.

Selven, S. G. Design considerations in pregnancy outcome studies of occupational population. *Scand J Work Environ Health 7*, 76-82, 1981.

Studies of pregnancy outcome are usually retrospective and cover an extended period of time. This type of design arises due to the combination of work force size, exposure, age distribution, and marital status. All of the data sources for such studies such as interviews, medical records, insurance data and vital statistics suffer from bias. The factors producing bias may be errors in determining exact fetal outcome such as early fetal loss, requirements for recording vital statistics, and differences in health care patterns.

Yano, E., Yoshioka, M. and Koizumi, A. Relationship between chemical structure and cytotoxicity of aliphatic amines examined by a microtiter system with cultured fibroblasts. *Sangyo Isaku 23*, 537-44, 1981.

Human fibroblasts were used to assay cytotoxicity of aliphatic amines in relation to their chain length. Regression curves of minimum inhibitory concentration on length of chain as expressed in carbon number revealed that the type of curve differed from that derived for diamines. The chromatographic hydrophobic parameter (RM) was derived. It was found that this value makes it easier to obtain the partition coefficient for the compounds. The authors, moreover, report on "...a newly developed microtiter system...". This system is rapid and may be used "...for the evaluation of the toxicity of chemicals especially in terms of a preliminary screening test".

Balster, R. L. and Woolverton, W. L. Unlimited access intravenous drug self-administration in rhesus monkeys. *Fed Proc 41*, 211-5, 1982.

The toxic consequences of self-administered drugs are revealed by studies using unlimited access in rhesus monkeys. The results as illustrated by data on phencyclidine suggest "...a pattern of drug intake that progresses from varibale day-to-day response rates at a low dose to relatively stable daily response rates at low dose with greater drug intake at a higher dose".

Hinton, D. E. et al. In vitro evaluation of the channel catfish Ictalurus punctatus (rafinesque) as a test species in chemcial carcinogenesis studies. *ASTM Spec Tech Publ 737,* 226-38, 1981. *Iss Aquat Toxicol Hazard Assess.*

Isolated subcellular fractions of liver from channel catfish were made to study the carcinogens produced from various chemicals such as benzo[a]pyrene. The results of this study demonstrate the ability of the subcellular fraction to "...metabolize carcinogens into mutagenic forms. Thus activation reactions could result in the initiation of carcinogenesis within the intact liver..." This species appeared suitable for carcinogen bioassay.

Gray, J. E. Appraisal of the intramuscular irritation test in the rabbit. *Fundam Appl Toxicol 1,* 290-292, 1981.

Human tolerance for i.m. administered drugs may be predicted from the muscular irritant tests in rabbits. The test includes gross and microscopic characterization of the lesion, as well as measures of creatine phosphokinase (CPK) following a single injection of the drug being studied. CPK activities up to and including 2000-3000 IU/liter are considered to indicate slight irritation and to be predictive of human tolerance. Animals are routinely scored at 24 hr., and 3 and 7 days as well.

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Kaiser, H. Species-specific potential of invertebrates for toxicological research. Complimentary copies are available from Dr. Arthur A. Wykes, Specialized Information Services, Lister Hill Center, Room 3N-303, National Library of Medicine, Bethesda, MD 20209.

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Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No and/or Control No: NCI No. C56257
NTP No. 10271-E

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Propantheline Bromide

INVESTIGATOR(S):

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Dr. J. Dunnick

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Development Corporation
Mattawan, MI 49071

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Propantheline bromide is being administered to rats and mice in the feed. Prechronic testing began during January 1982.

CAS Registry No.
Propantheline bromide 50-34-0

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Pharmacokinetics of propantheline bromide in normal man
Br. J. Clin. Pharmacol.; VOL 7, ISS 1, 1979,89-93

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61165
NTP No. 10238-A

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Seneciphylline

INVESTIGATOR(S):
For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Seneciphylline has been replaced by Riddelliine in the test program.

CAS Registry No.
Seneciphylline 480-81-9

TOX-TIPS JULY 1982 74-13

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TOXICOL LETT (AMST); 8 (4-5). 1981. 217-222.

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SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61358
NTP No. 10237-W

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Riddelliine

INVESTIGATOR(S):
For further information, contact
Technical Information Section
Dr. D. Goldman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code: Hazelton Raltech Inc.
Madison, WI 53704

PERIOD FOR THIS NRP:
Start Date: September 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

Riddelliine has been scheduled for testing through the subchronic phase only as part of the NTP testing program. This phase includes characterization by general toxicity, chemical disposition, and genetic toxicity. The chemical is being administered to rats and mice by gavege. Prechronic testing was scheduled to begin during June 1982.

CAS Registry No.
Riddelliine 23246-96-0

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SMITH LW ; CULVENOR C CJ
PLANT SOURCES OF HEPATO TOXIC PYRROLIZIDINE ALKALOIDS
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NOTICE OF RESEARCH PROJECT

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SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No. and/or Control No.: NCI No. C60560
NTP No. 10170-V

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Tetrahydrofuran

INVESTIGATOR(S):

For further information, contact
Technical Information Section
Dr. B. Gupta

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
Gulf South Research Institute
New Iberia, LA 70560

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Tetrahydrofuran is being administered to rats and mice by gavage. Prechronic testing began during January 1982.

CAS Registry No.
Tetrahydrofuran 109-99-9

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NCI No. C56042
NTP No. 10276-Y

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Triamterene

INVESTIGATOR(S):

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Dr. C. Whitmire

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International Research and
Development Corporation
Mattawan, MI 49071

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Triamterene is being administered to rats and mice via their feed. Prechronic testing began during January 1982.

CAS Registry No.
Triamterene 396-01-0

TOX-TIPS JULY 1982 74-19

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National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NCI No. C60220
and/or Control No: NTP No. 10914-F

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of 1,2,3-Trichloropropane

INVESTIGATOR(S):

For further information, contact
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Hazelton Laboratories
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Vienna, VA 22180

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

1,2,3-Trichloropropane is being administered to rats and mice by gavage. Prechronic testing began during February 1982.

CAS Registry No.
1,2,3-Trichloropropane 96-18-4

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61041
NTP No. 10277-D

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Tricresyl Phosphate

INVESTIGATOR(S):

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PERIOD FOR THIS NRP:

Start Date:

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Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Tricresyl phosphate is being administered by gavage to rats and mice. Prechronic testing began during February 1982.

CAS Registry No.
Tricresyl phosphate 1330-78-5

TOX-TIPS JULY 1982 74-23

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61198
NTP No. 10305-V

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Tungsten Carbide

INVESTIGATOR(S):
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Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Studies of tungsten carbide are in the experimental design stage. Testing through the subchronic phase is expected.

CAS Registry No.
Tungsten carbide [WC] 12070-12-1

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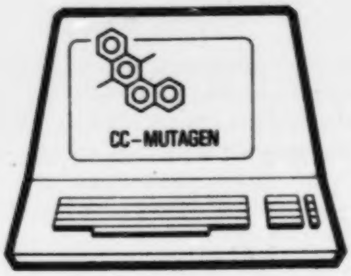

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RTECS DEFINED

RTECS (Registry of Toxic Effects of Chemical Substances) is in the National Library of Medicine's online version of the National Institute for Occupational Safety and Health's (NIOSH) annual compilation of substances with toxic action. The original collection of data that makes up RTECS was known as the Toxic Substances List, compiled in 1971 by NIOSH in response to the Occupational Safety and Health Act of 1970. The hard copy version of RTECS is updated annually with quarterly microfiche editions available. NIOSH is responsible for the file content in RTECS, and for providing quarterly updates to NLM. RTECS currently contains toxicity data for more than 50,000 substances (1/82).

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability.

RTECS ACCESSED

RTECS is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

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The user can search RTECS for a particular chemical record by entering the Secondary Source ID, CAS Type 1 Name, Synonyms, or CAS Registry Number. The user can also search RTECS for information on a group of compounds or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected effects reported for a given substance. Online RTECS gives the user the flexibility of interactive searching and retrieval which allows focusing on subsets of data and tailoring of prints according to user needs.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability.

RTECS ACCESSED

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RTECS SEARCHED

The user can search RTECS for a particular chemical record by entering the Secondary Source ID, CAS Type 1 Name, Synonyms, or CAS Registry Number. The user can also search RTECS for information on a group of compounds or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected effects reported for a given substance. Online RTECS gives the user the flexibility of interactive searching and retrieval which allows focusing on subsets of data and tailoring of prints according to user needs. A simulated RTECS record, in the format it appears in the online file follows:

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ISSN: 0146-1559

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PB82-915008
NUMBER 75
AUGUST 1982

TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

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35 SYMPOSIUM ON INFORMATION TRANSFER IN TOXICOLOGY
37 NOTICE OF RESEARCH PROJECT BLANK FORM
39 TOXLINE CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

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TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

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FROM THE EDITOR

The National Toxicology Program's Fiscal Year 1982 report has been released. It is available upon request in two volumes from:

National Toxicology Program
Public Information Office
P.O. Box 12233
Research Triangle Park, NC 27709
(919-541-3991; FTS 629-3991)

The ANNUAL PLAN (Publication No. NTP-81-94 March 1982) reports "Accomplishments of NTP programs during FY 1981 and program plans for 1982...." The second volume is the Review of Current DHHS, DOE, and EPA Research Related to Toxicology for Fiscal Year 1982. This publication (No. NTP-82-040, June 1982) "...covers projections for Fiscal Year 1982 made prior to January 1, 1982. It represents responses by agencies of DHHS, DOE, and EPA to requests by the Director, NTP, for information on agency programs in basic toxicology research, toxicology testing, and toxicology method development." The bulk of this volume is in tabular form and it summarizes the individual projects.

Carol B. Haberman
EDITOR, TOX-TIPS

WORLD HEALTH ORGANIZATION

FELLOWSHIPS FOR RESEARCH TRAINING IN CANCER
1983-1984
International Agency for Research on Cancer
Lyon - France

Applications for training fellowships in 1983-1984 are invited from junior scientists wishing to be trained in those aspects of cancer research related to the Agency's own programme: epidemiology, biostatistics and environmental carcinogenesis - both chemical and viral. Only applications in these fields can be entertained.

Applicants should be engaged in research in medical or allied sciences and intend to pursue a career in cancer research.

Fellowships are awarded for one year and are tenable at the Agency or in another suitable institution abroad. Fellows will, in general, be selected from applicants with some post-doctoral research experience related to cancer in medicine or the natural sciences. They must have an adequate knowledge, both written and spoken, of the language of the country in which their fellowship is tenable.

Applications cannot normally be accepted from people already holding fellowships enabling them to study abroad.

Stipends will vary according to the cost of living in the country of study. The cost of travel for the applicant and, in certain circumstances, that of one dependent will be met.

Fellowship application forms and more detailed information are available from:

The Head of the Research Training and Liaison Programme

INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

150 cours Albert-Thomas
69372 LYON CEDEX 08
France

Applications must reach the Agency not later than
31 January 1983

THE TRAVEL FELLOWSHIPS PROGRAMME HAS BEEN SUSPENDED

METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS

National Library of Medicine

Toxicology Information Program

Bethesda, MD 20209

Telephone 301/496-1131

The following group of references were gathered together to update those listed in TOX-TIPS for February, 1982.

STUDYING TOXIC RESPONSES IN FETAL AND YOUNG ANIMALS.

Aroux, M. Behavioral teratogenesis. A new aspect of the pathology of prenatal development. *J Gynecol. Obstet Biol Reprod (Paris) 10,* **633-40, 1981.**

> **Functional disorders, especially of the nervous system, can exist in the absence of anatomical malformations. These are considered to be due to "...diverse maternal and even paternal assaults on the developing conceptus." These disorders of intellectual, behavioral, and motor systems may be of toxic, dietary or iatrogenic origin. Moreover, they may affect the sexes differently. The author suggests a terminology for these aspects of teratogenesis and points out certain practical facets of experimental planning within the framework of this terminology, in addition to emphasizing factors "...which can affect the optimum quality of the offspring...".**

Storeng, R. and Jonsen, J. Embryo cultures in toxicological research. Meeting on chemical indices and mechanisms of organ directed toxicity, Barcelona, Spain, March 4-7, 1981, *Gen Pharmacol 12,* A33, 1981.

Clayton, R. M. and Zehir, A. The use of cell culture methods for exploring teratogenic susceptibility. *Dev Toxicol* 59-82, 1982.

> This review has approximately 130 references on the use of cell culture techniques in testing new drugs and chemicals for teratogenic effects in the human fetus.

Kochar, D. M. *In vitro* testing of teratogenic agents using mammalian embryos. *Teratogenesis Carcinog Mutagen 1,* 63-74, 1980.

> Efficient methods for the testing of new drugs for teratogenic effects are urgently needed. Also variables in the current use of pregnant dams have many variables all of which may affect the young but which are difficult to control adequately. In the author's opinion, organ cultures and whole embryo cultures offer many advantages, not the least of which is the opportunity to control conditions more precisely than can be done when whole animals are used. The author stresses the advantage of limb culture for screening purposes. Such a screening technique in his view not only provides information on teratogenicity but also on the mechanism of action of the drug.

Hardin, B. D. et al. Testing of selected workplace chemicals for teratogenic potential. ***Scand. J. Work Environ Health 7 Suppl 4,*** **66-75, 1981.**

> **Nineteen industrial chemicals were studied for their teratogenic potential. Evidence of such potential was found with allyl chloride and bisphenol A. Fetal toxicity in the absence of maternal toxicity was found for methyl styrene and 2-nitropropane. 2-ethoxyethanol was shown in inhalation studies to be strongly embryotoxic at higher exposure levels in the inhalation studies and was teratogenic at lower concentration.**

Nau, H. et al. New model for embryotoxicity testing: teratogenicity and pharmacokinetics of valproic acid following constant-rate administration in the mouse using therapeutic drugs and metabolite concentrations. ***Life Sci 29,*** **2803-2814, 1981.**

Giavini, E. et al. The preimplantation embryo as a target system for drugs and heavy metals. *Organ-Directed Toxic Chem Indices Mech Proc Symp:* 311-15, 1981

> Embryotoxic effects as judged by a decrease in blastocytes was produced by heavy metals studied in the following order Cu Pb Cd. On the basis of the same criteria actinomycin-D and daunomycin administered on day 1 or 2 to pregnant rats were embryolethal and embryotoxic and only embryotoxic on day 3. Chloroamphanicol administered on day 1 induced loss of blastocytes and hence potential embryolethality. Cyclophosphamide was markedly embryotoxic but thiamphenicol appeared to have no embryotoxicity under the conditions of these experiments.

Bass, R. and Neubert, D. Testing for embryotoxicity, in: further studies in the assessment of toxic actions. *Arch Toxicol Suppl 4,* 256-266, 1980.

Elo, H. Methods used in the study of teratogenic and embryotoxic properties of chemicals. ***Acta Pharm Fenn 86,*** **87-94, 1977.**

> The critical points in embryonic development, planning teratogenicity tests, and interpretation of results as well as the arguments for and against the use of *in vitro* methods in contrast to *in vivo* and/or epidemiological methods were considered. Methods for testing mutagenicity were also discussed.

Fabro, S., Shull, G. and Brown, N. A. The relative teratogenic index and teratogenic potency: proposed components of developmental toxicity risk assessment. *Teratogenesis Carcinog Mutagen 2,* 61-76, 1982.

> "Teratogenicity tests should provide answers to three questions: (1) Can the agent induce developmental defects? ("teratogenic potential"); (2) What are the effective doses? ("teratogenic potency"); and (3) Are effective doses below adult toxic doses? ("teratogenic hazard"). The authors propose parameters to describe teratogenic hazard and teratogenic potency in quantitative terms. Details of the derivation and parameters are given for the CD-1 mouse using eight structurally related anhydrides.

Kline, J. et al. Epidemiological detection of low dose effects on the developing fetus. *Environ Health Perspect 42,* 119-26, 1981.

> Models developed for the study of carcinogens have been transferred to studies on reproduction. The authors emphasize the distinctive features of reproduction which must be considered before models developed for cancer studies can yield valid data. The discussion centers around the questions that arise in attempting to set safe levels of smoking and alcohol intake in order to avoid spontaneous abortion or birthweight so low as to put the newborn at risk.

McGarrity, C. et al. The effect of sodium salicylate on the rat embryo in culture: an *in vitro* model for the morphological assessment of teratogenicity. *J Anat 133*, 257-269, 1981.

Gravid rats were injected at 9.5 days gestation and the fetuses examined at 11.5 days for resorption and abnormalities. Blood serum levels of salicylate were determined 3-3.5 and 18.5 hours after injection. These data established the harmful effects of salicylate under these circumstances. *In vitro* cultures of embryos were then exposed to salicylate either by addition of the drug to the culture medium or by including serum from salicylate injected females in the culture medium. There was a "...great similarity between the results obtained from animals cultured in serum with salicylate added and results from culture in serum of salicylate treated rats." The authors conclude that the drug acts "...directly on the feto-placental unit..." and is itself the teratogen.

JOURNAL LITERATURE

Kramer, P. G. and Knaap, A. G. Mutagenicity tests in the toxicological evaluation of chemical agents: A report from the Public Health Council. *Ned Tijdschr Geneskd 27*, 392-3, 1982.

Horakova, K. Use of cultures in monitoring the toxic and mutagenic effects of chemical substances present in the environment. *Cesk Fysiol. 30*, 407-25, 1981.

This review with more than 100 references deals with mutagenicity resulting from environmental toxicants and the use of cell culture techniques in monitoring such toxicants for mutagenicity.

DeMarini, D. M., Plews, M. J. and Brockman, H. E. Use of four short-term tests to evaluate the mutagenicity of municipal water. ***J Toxicol Environ Health* 9, 127-40, 1982.**

> **The four tests used measured reverse mutation (in a prokaryote), forward mutation (in mold), mitotic gene conversion (in yeast), and reverse mutation (in maise). Although it was not possible to "...rigorously compare..." the sensitivities of the four tests, certain conclusion could be drawn. "The results suggest that tests that detect a variety of genetic end-points should be used when testing complex mixtures such as drinking water." The authors discuss the advantages and disadvantages of such a battery of tests as applied to water.**

Preston, R. J. et al. Mammalian *in vivo* and *in vitro* cytogenetic assays: a report of the U.S. EPA's gene-tox program. *Mutat Res 87*, 143-88, 1981.

> This review, which includes 162 references, is an assessment of the clastogenic effects of chemicals both *in vivo* and *in vitro*. Much of the date available were not suitable for inclusion due to poor experimental design or unsatisfactory reporting of the data. The report concludes that for demonstration of *in vivo* effects, the simplest and most economical assay is the bone marrow assay. For *in vitro* studies, either leukocytes or cultured mammalian cell lines are suitable. There are, however, some advantages to the use of leukocytes, such as their ready availability. "In general, there was good agreement between clastogenicity and carcinogenicity."

Shiomi, T., Hieda-Shiomi, N. and Sato, K. A novel mutant of mouse lymphoma cells sensitive to alkylating agents and caffeine. *Mutat Res 103*, 61-9, 1982.

> Two strains of lymphoma cells sensitive to methyl methanesulfonate have been isolated. One strain, M10, has previously been reported as sensitive to X-rays and now is shown to be sensitive to alkylating agents and to caffeine. The sensitivity of this strain to mutagens has been stable for one year. Cultures of the other strain, MS-1, have been stable for six months.

Anonymous Chemical innovations: How big is toxic testing barrier? *Industrial Chemical News, Vol 3 No. 6*, 25-27, 1982.

The effects of governmental regulations from several agencies upon the development and marketing of new chemicals as well as the problem for industry of attempting to meet testing standards is discussed from the point of view of industry.

Davis, W. E. Health effects of chemicals: I. Carcinogenicity bioassay in laboratory animals. *Life Sciences Research Reports 12*, No. 1, April 1982.

This excellent discussion of bioassay for carcinogenic effects of various chemicals covers the procedures used, and the interpretation of data.

Blazak, W. F., Sharma, R. K. and Krishna M. Health effects of chemicals: II. Short-term *in vitro* and *in vivo* cytogenetic procedures. *Life Sciences Research Report, 12*, No. 2, April 1982.

These authors discuss and evaluate short-term cytogenetic procedures as a means of assessing the mutagenic poteitnal of environmental chemicals.

GOVERNMENT REPORTS

Published by U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, March, 1982.

A report of organic air pollutants that have been tested for carcinogenicity and mutagenicity. Report of a collaborative study between the National Cancer Institute and SRI International. This survey was supported by NCI contract NOI-CP-95607 with SRI International.

The following reports are available from:

National Technical Information Service

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Acute toxicity testing criteria for new chemical substances. EPA 560/13-79-009 (NTIS Order #: PB80-111 073)

Analytical protocols for making a preliminary assessment of halogenated organic compounds in man and environmental media. EPA 560/13-79-010 (NTIS Order #: PB80-162 168)

Cadmium and lead levels in human blood and kidney, literature search. EPA 560/13-80-002 (NTIS Order #: PB80-220 221)

Beck, S. L. Skeletal variants as an indicator of biological effects of environmental contaminants. EPA 600/S1-81-034 June 1981. (NTIS Order #: PB81-186 025)

Barth, M. L. and Richardson, R. J. Development of an *in vitro* neurotoxicity assay. EPA 600/S1-81-043 July 1981. (NTIS Order #: PB81-208 159)

FEDERAL REGISTER

Availability of Draft Guidelines: Target Animal Safety for New Animal Drugs. Extension of Comment Period. *Federal Register* 47, No. 108, Friday, June 4, 1982, page 24439.

NOTICE OF RESEARCH PROJECT

TOX-TIPS

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBERS:

Contract No: NTP No. 10026-Y
and/or Control No: NCI No. C56633

PROJECT TITLE:

Carcinogenesis Bioassay of Trimellitic Anhydride

INVESTIGATOR(S):

Contact:
Dr. Herbert Schumacher

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Center for Toxicological Research

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

National Center for Toxicological Research (NCTR)
National Toxicology Program
Jefferson, Arkansas 72079

PERIOD FOR THIS NRP:

Start Date:

End Date.

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassay generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pre-testing, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Trimellitic anhydride is undergoing subchronic testing. The chemical is being administered to rats and mice via their food and by gavage.

CAS Registry No.
Trimellitic anhydride 552-30-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Wolkonsky P
The industrial physician and occupational lung disease.
J Allergy Clin Immunol; VOL 70, ISS 1, 1982, P67-9

Patterson R ; Zeiss CR ; Pruzansky JJ
Immunology and immunopathology of trimellitic anhydride pulmonary reactions.
J Allergy Clin Immunol; VOL 70, ISS 1, 1982, P19-23

Zeiss CR ; Wolkonsky P ; Pruzansky JJ ; Patterson R
Clinical and immunologic evaluation of trimellitic anhydride workers in multiple industrial settings.
J Allergy Clin Immunol; VOL 70, ISS 1, 1982, P15-8

Patterson R ; Pruzansky JJ ; Zeiss CR ; Greenberger PA ; Ts'ao C
Mintzer R ; Roxe D ; Phair J
CLINICAL & LABORATORY STUDIES RELATING TO LUNG DISEASE
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Patterson R ; Pruzansky JJ ; Zeiss CR ; Greenberger PA
ALLERGIC DISEASES CENTERS GRANT
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Liu FT ; Bargatze RF ; Katz DH
Induction of immunologic tolerance to the trimellitate haptenic group in mice: model for a therapeutic approach to trimellitic anhydride-induced hypersensitivity syndromes in humans?
J Allergy Clin Immunol; VOL 66, ISS 4, 1980, P322-6

From the NIH: Occupational asthma from a low-molecular-weight organic chemical.
JAMA; VOL 244, ISS 15, 1980, P1667-8

Check WA
Work-related asthma comes out of hiding [news]
JAMA; VOL 244, ISS 15, 1980, P1653-4, 1659

Patterson R ; Roberts M ; Harris KE ; Levitz D ; Zeiss CR
Pulmonary and systemic immune responses of rhesus monkeys to intrabronchial administration of trimellitic anhydride.
Clin Immunol Immunopathol; VOL 15, ISS 3, 1980, P357-66

Zeiss CR ; Levitz D ; Chacon R ; Wolkonsky P ; Patterson R
Pruzansky JJ
Quantitation and new antigenic determinant specificity of antibodies induced by inhalation of trimellitic anhydride in man.
Int Arch Allergy Appl Immunol; VOL 61, ISS 4, 1980, P380-8

NOTICE OF RESEARCH PROJECT

TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

Chemical Manufacturers Association
2501 M Street, NW
Washington, DC 20037

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: CB 4.0-AHF
and/or
Control No:

PROJECT TITLE:

In vitro Studies on 1,2,4-Trichlorobenzene

INVESTIGATOR(S):	**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Gary M. Williams, M.D.	Study Director, American Health Foundation
Carol R. Stack, Ph.D.	Program Administrator, CMA

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

American Health Foundation
Naylor Dana Institute for Disease Prevention
Valhalla, NY 10595

PERIOD FOR THIS NRP:

Start Date: May 1982
End Date: September 1982
Annual Funding:

PROJECT SUMMARY:

The purpose of the study is to evaluate 1,2,4-trichlorobenzene for its capacity to produce DNA repair or transformation in liver cell culture systems.

The hepatocyte primary culture/DNA repair assay developed by Williams uses isolated hepatocytes to detect DNA damage by measurement of DNA repair synthesis.

The assessment of neoplastic transformation by chemicals in adult rat liver epithelial cells (ARL) consists of assays for five markers of transformation: growth in soft agar, growth in low calcium medium, increase in cell density at confluency, presence of cytochemical activity of gamma-glutamyl transpeptidase, and increase in 2-deoxyglucose uptake.

CAS Registry No.
1,2,4-Trichlorobenzene 120-82-1

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

SMITH CC ; CRAGG ST ; WOLFE GF
SUBACUTE TOXICITY OF 1,2,4-TRICHLOROBENZENE IN SUBHUMAN PRIMATES
FED PROC,FED AM SOC EXP BIOL; 37:248,1978

ROBINSON KS ; KAVLOCK RJ ; GRAY LE ; CHERNOFF N
Multigeneration study of 1,2,4-trichlorobenzene in rats.
J TOXICOL ENVIRON HEALTH; 8 (3). 1981. 489-500.

Kociba RJ ; Leong BK ; Hefner RE Jr
Subchronic toxicity study of 1,2,4-trichlorobenzene in the rat, rabbit and beagle dog.
Drug Chem Toxicol; VOL 4, ISS 3, 1981, P229-49

Lingg RD ; Kaylor WH ; Pyle SM ; Kopfler FC ; Smith CC ; Wolfe GF
Cragg S
Comparative metabolism of 1,2,4-trichlorobenzene in the rat and rhesus monkey
Drug Metab. Dispos.; VOL 10, ISS 2, 1982,134-41

Johnson JS
Appendix I 1,2,4-TCB Information
Govt Reports Announcements & Index (GRA&I), Issue 16, 1982

Sasmore DP ; Palmer D
Ninety-Day Study of Inhaled 1,3,5-Trichlorobenzene in Rats.
Progress Report
Govt Reports Announcements & Index (GRA&I), Issue 16, 1982

SPEHAR RL ; LEMKE AE ; PICKERING QH ; ROUSH TH ; RUSSO RC
YOUNT JD
EFFECTS OF POLLUTION ON FRESH WATER FISH
J WATER POLLUT CONTROL FED; 53 (6). 1981. 1028-1076.

BUCCAFUSCO RJ ; ELLS SJ ; LEBLANC GA
ACUTE TOXICITY OF PRIORITY POLLUTANTS TO BLUEGILL
LEPOMIS-MACROCHIRUS
BULL ENVIRON CONTAM TOXICOL; 26 (4). 1981. 446-452.

Law FC P ; Addison RF
Response of trout hepatic mixed-function oxidases to experimental feeding of 9 known or possible chlorinated environmental contaminants
Bull. Environ. Contam. Toxicol.; VOL 27, ISS 5, 1981,605-9

Heitmuller PT ; Hollister TA ; Parrish PR
Acute toxicity of 54 industrial chemicals to sheepshead minnows (Cyprinodon variegatus)
Bull. Environ. Contam. Toxicol.; VOL 27, ISS 5, 1981,596-604

NOTICE OF RESEARCH PROJECT

TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

Chemical Manufacturers Association
2501 M Street, NW
Washington, DC 20037

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: CB 4.0-AHF
and/or
Control No:

PROJECT TITLE:

In vitro Studies on o-Dichlorobenzene

INVESTIGATOR(S):	DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Gary M. Williams, M.D.	Study Director, American Health Foundation
Carol R. Stack, Ph.D.	Program Administrator, CMA

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

American Health Foundation
Naylor Dana Institute for Disease Prevention
Valhalla, NY 10595

PERIOD FOR THIS NRP:

Start Date: May 1982
End Date: September 1982
Annual Funding:

PROJECT SUMMARY:

The purpose of the study is to evaluate o-dichlorobenzene for its capacity to produce DNA repair or transformation in liver cell culture systems.

The hepatocyte primary culture/DNA repair assay developed by Williams uses isolated hepatocytes to detect DNA damage by measurement of DNA repair synthesis.

The assessment of neoplastic transformation by chemicals in adult rat liver epithelial cells (ARL) consists of assays for five markers of transformation: growth in soft agar, growth in low calcium medium, increase in cell density at confluency, presence of cytochemical activity of gamma-glutamyl transpeptidase, and increase in 2-deoxyglucose uptake.

CAS Registry No.
o-Dichlorobenzene 95-50-1

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Washington, DC 20037

SUPPORTING ORGANIZATION NUMBERS:

Contract No. and/or Control No: CB 4.0-AHF

PROJECT TITLE:

In vitro Studies on Monochlorobenzene

INVESTIGATOR(S):	DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Gary M. Williams, M.D.	Study Director, American Health Foundation
Carol R. Stack, Ph.D.	Program Administrator, CMA

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:

American Health Foundation
Naylor Dana Institute for Disease
Prevention
Valhalla, NY 10595

PERIOD FOR THIS NRP:

Start Date: May 1982

End Date: September 1982

Annual Funding:

PROJECT SUMMARY:

The purpose of the study is to evaluate monochlorobenzene for its capacity to produce DNA repair or transformation in liver cell culture systems.

The hepatocyte primary culture/DNA repair assay developed by Williams uses isolated hepatocytes to detect DNA damage by measurement of DNA repair synthesis.

The assessment of neoplastic transformation by chemicals in adult rat liver epithelial cells (ARL) consists of assays for five markers of transformation: growth in soft agar, growth in low calcium medium, increase in cell density at confluency, presence of cytochemical activity of gamma-glutamyl transpeptidase, and increase in 2-deoxyglucose uptake.

CAS Registry No.
Monochlorobenzene 108-90-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NOTICE OF RESEARCH PROJECT
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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10008-R
NCI No. C55969

PROJECT TITLE:

Carcinogenesis Bioassay of Gentian Violet

INVESTIGATOR(S):

Contact:
Dr. Herbert Schumacher

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Center for Toxicological Research

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
National Center for Toxicological Research (NCTR)
National Toxicology Program
Jefferson, Arkansas 72079

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pre-testing, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

This chemical has been administered to rats and mice via their feed. Testing is in the multi-generation chronic phase for rats. The chronic mice studies are in histopathology.

CAS Registry No.
Gentian violet 548-62-9

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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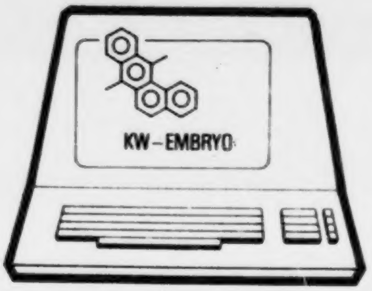

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The IRCC Project is sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Diesease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The following annotated bibliographies are now available.

NLM/TIRC-80/1 HEALTH AND ENVIRONMENTAL EFFECTS OF ACID RAIN. *An abstracted literature collection 1966-1979.* N. S. Dailey and S. G. Winslow, Toxicology Information Response Center, March 1980. 202 pages. $15.00 postpaid.

Major subject categories include: *Atmospherics; Aquatic and Terrestrial Environmental Effects; Health Effects; Measurement Methods; Modeling.* A listing of current research projects, including a brief description, sponsor and principal investigator, is provided at the end of the bibliography.

NLM/TIRC-80/2 ASBESTOS IN AIR. *A bibliography with abstracts 1964-1980.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, July 1980. 52 pages. $7.00 postpaid.

This bibliography includes references pertaining to quantitative methods of determining airborne asbestos particles and quantitative levels of atmospheric asbestos fibers. A permuted title index (KWOC) is also provided.

NLM/TIRC-80/3 CHEMICAL WASTE DISPOSAL—Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes. *A selected bibliography with abstracts 1964-1979.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, November 1980. 82 pages. $10.00 postpaid.

References are categorized in the following topical areas: *Adverse Effects* on Aquatic Species, Terrestrial Species and Vegetation; *Methods of Disposal* including burial, injection, landfill, spray and water; *Radioactive Waste Disposal; Environmental Impact* including analysis, monitoring, identification, environmental contamination and transport; *Health Effects* including biological studies, toxicity, tissue accumulation and mortality data for aquatic and terrestrial animals.

NLM/TIRC-80/4 HEALTH ASPECTS OF UREA/FORMALDEHYDE COMPOUNDS. *A selected bibliography with abstracts 1963-1980.* N. P. Drago, J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, December 1980. 52 pages. $7.50 postpaid.

Each of the 134 references contains a citation in alphabetical order by author and an abstract where available. A title index is also provided. A number of the references (44%) pertain to urea-formaldehyde compounds used in home insulation and in the fabrication of construction materials.

NLM/TIRC-81/1 TOXICITY OF VANADIUM COMPOUNDS. *A Bibliography with Abstracts 1965-1980.* N. S. Dailey, S. A. Mashburn and S. G. Winslow, Toxicology Information Response Center, July 1981. 100 pages. $15.00 postpaid.

This report was produced primarily because of concern for the effects of potential exposure to vanadium compounds associated with synthetic fuel processes. The 261 references each contain a citation as well as an abstract where available. A title index and chemical name index are also provided.

NLM/TIRC-81/2. THE EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE IMMUNE SYSTEM. *A selected bibliography with Abstracts, 1969-1980.* By S. G. Winslow, TIRC, Oak Ridge National Laboratory. November 1981, 78 pages, $10.00 postpaid.

The report contains 216 references, each containing a citation (in alphabetic order by author), an abstract (where available), chemical name(s), and species used. Several indices (chemical name, species, and title) are provided. Sources searched included ten DIALOG^{R} files plus MEDLINE and TOXLINE.

NLM/TIRC-82/1. HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM. *A selected bibliography with Abstracts, 1963-1981.* By J. G. Pruett and S. G. Winslow. Toxicology Information Response Center, October 1982. 62 pages. $10.00 postpaid.

The report contains 305 reference, including citations on occupational or inadvertent (environmental) exposure to chemicals. Each listing contains a citation, an abstract (where available), chemical name(s) (if specified), and keywords. Information concerning current research projects and reviews are in separate sections at the end of the bibliography. A total of ten DIALOG^{R} and MEDLARS^{R} sources were searched.

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METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

JOURNAL LITERATURE

Soliman, S.A. et al. Species susceptibility to delayed toxic neuropathy in relation to *in vivo* inhibition of neurotoxic esterase by neurotoxic organophosphorus esters. *J Toxicol Environ Health* 9, 189-197, 1982.

Tri-o-cresyl phosphate (TOCP) and O-Et-O-(4-cyanophenyl) phenylphosphonothioate, both known delayed neurotoxic agents, produced approximately 90% inhibition of "...brain neurotoxic esterase activity" (NTE), in chickens, but in mice each compound produced approximately half that inhibition and no recognizable clinical symptoms. The authors conclude: "Thus the difference between chickens and mice in susceptibility to neurotoxic organophosphates may be attributed to inhibition specificity of NTE forms in the brain in these two different animal species and/or the inability of the active metabolites of these neurotoxic compounds to reach the site of action."

Watson, D.H. and Lindsay, D.G. A critical review of biological methods for the detection of fungal toxins in foods and foodstuffs. *J Sci Food Agric 33,* 59-87, 1982.

This review discusses 78 references pertinent to the subject.

Becker, C.D. and Crass, D.W. Examination of procedures for acute toxicity tests with the fathead minnow and coal synfuel blends. *Arch Environ Contam Toxicol 11*, 33-40, 1982.

Flow-through procedures were found to be more stable in terms of providing the minnows with relatively constant levels of oxygen and phenolics than static procedures. The flow-through tests were considered adequate to measure toxicity of aqueous extracts from liquified coal. The authors caution, however, that laboratory tests may not portray field conditions accurately because, in the field, biodegradation as well as other interactions in the environment may have significant influence.

Penning. W. and Town, W.G. Development of the toxicological files in environmental chemicals data and information network (ECDIN). *Clin Toxicol 18*, 169-181, 1981.

A data base furnishing information on potentially toxic chemicals has been initiated by the Joint Research Centre of the Commission of the European Communities and their research institutions. The project will be developed as part of the environmental research program of those countries. The data being stored have been obtained from the original literature and evaluated by specialists in the field. All phases of the chemical substance are covered including identification, chemical and physical properties, analytical methods, hazards of manufacture and distribution as well as use, treatment of poisoning, toxic effects both clinical and laboratory, etc.

Case, D.E. The state of the art: a commentary on the current practice of metabolism and pharmacokinetic studies in the pharmaceutical industry. *Xenobiotics 11,* 803-14, 1981.

Four points are considered by the author: 1. The role of those making safety evaluations on the basis of studies of metabolism and pharmacokinetics. 2. Some of the classical concepts of drug action may require reevaluation and restatement in the future. If this occurs methods which now appear adequate may need to be changed. 3. Study design as related to the broad context of regulatory requirements. 4. New proposals may affect the design of metabolic and pharmacokinetic experiments and their evaluation in the future.

Chanter, D.O. and Heywood, R. The LD50 test: some considerations of precision. *Toxicol Lett 10,* 303-7, 1982.

The LD50 test can be improved by the use of modern methods of statistical analysis, and some changes in test design including the use of sequential methods. Such improvements would make it possible to reduce the number of animals used to 10-20 without the loss of precision.

Schramm, T. Short-term tests in assessment of cancer risks and in the primary prevention of occupational cancer. *Arch Geschwulstforsch 52*, 75-81, 1982.

> Short-term tests are a valuable adjunct to data obtained from epidemiological studies or from long-term studies on animals. The short-term tests, instead of depending upon tumor formation, are based on the interaction between chemicals (or their metabolites) and cellular macromolecules such as DNA. "Sensitivity, specificity, and prediction value are important criteria of short-term tests." Metabolic changes may markedly influence the results. "However ...the conclusive demonstration... of a carcinogen ..requires the significant induction of tumors *in vivo*."

Nakajima, T., Koyama, Y., and Sato, A. Dietary modification of metabolism and toxicity of chemical substances--with special reference to carbohydrates. *Biochem Pharmacol 31*, 1005-11, 1982.

> Toxic liver injury, at least in the case of carbon tetrachloride, may bear a definite relationship to the diet of the test animals. The smaller the carbohydrate intake, the more marked the liver injury. The authors demonstrated this effect using isocaloric diets in which the calories lost by carbohydrate restriction were replaced by increased amounts of fat and protein.

Boling, R.H. Jr. A technique for computer-controlled toxicant injection. *Bull Environ Contam Toxicol 27*, 773-4, 1981.

Longacre, S.L., Kocsis, J.J. and Snyder, R. Influence of strain differences in mice on the metabolism and toxicity of benzene. *Toxicol Appl Pharmacol 60*, 398-409, 1981.

The toxicity of benzene to bone marrow is thought to be due to a metabolite. In studies on the C57BL/6 and the DBA/2 strains of mice, the latter strain was found to be more susceptible although no differences in the total urinary metabolites could be found between the two species. However, marked differences occurred in the proportions of the various metabolites. Other factors as well as differences in benzene metabolites may have contributed to the situation such as differences in Vmax values for UDPGA utilization and for phenylsulfate formation. The authors suggest, therefore, that "difference in susceptibility ...was not the result of a single factor but the sum total of a number of metabolic events."

Keck, G. Specific differences in pharmacokinetics of chemicals: Correlation with toxicity. *Toxicol Eur Res 3*, 207-215, 1981.

The characteristics of chemicals from absorption through distribution and involvement in body processes to excretion were studied in both laboratory and domestic animals. The differences are discussed from their toxicological and pharmacological bases including experimental, theoretical and practical (veterinary).

Mueller, H. G. Use of an electronic particle counter to determine the number of young Daphnia-Magna in ECO toxicological reproduction tests. *Bull Environ Contam Toxicol 27*, 440-441, 1981.

Soliman, S.A., Curley, A. and El Sebae, A.K. A direct method to assay neurotoxic esterase activity. *Toxicol Lett (Amst) 9*, 283-288, 1981.

This paper describes a direct photometric method to assay neurotoxic esterase (NTE) activity in microsomal preparations from chicken brain. For this method, the most hydrolyzable esters were 4-nitrophenyl valerate and caproate. The others tested, e.g. 4-nitrophenyl esters of proprionic, butyric, lauric, capric, were not as good substrates.

Dean, J.H. et al. Procedures available to examine the immunotoxicity of chemicals and drugs. *Pharmacol Rev 34,* 137-48, 1982.

> Immunology offers great advantages in the assessment of the toxicity of drugs and in the determination of their safety. Before this opportunity can be well utilized, more information is needed on several points, i.e. the correlation between immune function and host resistance changes, and better standardized methods for immunotoxicity screening. The studies presented in this paper are preliminary examples of *in vitro* methods using microsomal activation techniques to screen chemicals for immunotoxicity, or induction of hypersensitivity or allergy, and to examine the relation between chemical structure and immunotoxicity.

Takagi, H., Namai, H. and Murakami, K.I. Evaluation of the hematoxylin staining method for detecting wheat tolerance to aluminum. *JPN J Breed* 31, 152-160, 1981.

> The inhibition of root cell division is an important method of measuring the effects of toxicants upon plants. This method has been used in the past to determine the resistance of various strains of wheat to aluminum. Tolerance to aluminum leads to a lower accumulation of aluminum in the roots than occurs in susceptible plants. The hematoxylin method gave results comparable to the nutrient solution culture method and was simpler and faster.

Tucker, A.N. et al. *In vitro* immunotoxicological assays for detection of compounds requiring metabolic activation. *Environ Health Perspect 43,* 123-7, 1982.

> Cyclophosphamide (CP) was activated by a crude microsomal fraction of mouse liver supplemented by the necessary cofactors. This preparation was "...interfaced with three murine cell culture assays for immunotoxicity." The absence of toxic activity by CP unless the liver microsomal preparation plus the necessary

cofactors was shown. Under optimal conditions for metabolic activation of the CP a dose related effect could be demonstrated.

Bronaugh, R.L., Stewart, R.F. and Conger, E.R. Methods for *in vitro* percutaneous absorption studies. II. Animal models for human skin. *Toxicol Appl Pharmacol 62,* 481-8, 1982.

Frank, S.B. Is the rabbit ear model, in its present state, prophetic of acnegenicity? *J Am Acad Dermatol 6,* 373-7, 1982.

The use of the rabbit ear model in the bioassay of preparations for topical application presents many problems. This review discusses these problems and the limitations of the conclusions that can be drawn from the results.

Feldman, R.G., Ricks, N.L., and Baker, E.L. Neuropsychological effects of industrial toxins: a review. *Am J Industr Med 1,* 211-27, 1980.

The value of standardized neuropsychological tests in the evaluation of exposure to industrial toxins has been significant. This review discusses these tests and their utilization in an occupational setting.

Baloh, R.W., Lanshofer, L., Brown, C.P., and Spivey, G.H. Quantitative eye tracking tests in lead workers. *Am J Industr Med 1,* 109-13, 1980.

In this paper eye tracking tests are considered only in connection with lead poisoning, but the same test could be used in any situation where toxic effects may be manifest in eye movements. The test is "...A microcomputer system for on-line analysis of saccadic and smooth pursuit tracking eye movements..."

NEW BOOKS

Paccagnella, B. and Murphy, S. Assessment of multichemical contamination. Proceedings of an international workshop, Milan, Italy, April 28-30, 1981. National Academy Press, Washington, D.C. 1982.

GOVERNMENT PUBLICATIONS

Determination of chemical residues in whole blood of selected Love Canal area residents. Prepared for U.S. Department of Justice by Health Effects Research Laboratory, Research Triangle Park, NC 27711. Environmental Protection Agency EPA-600/1-80-0036, September 1980.

GOVERNMENT REPORTS

(Available from National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161)

Thomas, R. et al. Evaluation of short-term bioassays to predict functional impairment. Selected short-term hepatic toxicity tests report; ISS MTR-80W00232; Order No. AD-A104762, 1980, 174pp.

> **A review of short-term bioassays used to predict effects of short-term exposure to various chemicals upon the liver. No references are given.**

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SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No:
NTP No. 11045-W
NCI No. C99990

PROJECT TITLE:

Carcinogenesis Bioassay of 3,3'-Dimethylbenzidine

INVESTIGATOR(S):
Dr. J. Mennear

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Hazelton Laboratories
9200 Leesburg Pike
Vienna, VA 22180

PERIOD FOR THIS NRP:
Start Date: February 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, 3,3'-dimethylbenzidine, a chemical used in dyes, is being administered to rats and mice via the drinking water. Prechronic testing began during March 1982.

CAS Registry No.
3,3'-Dimethylbenzidine 119-93-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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CARCINOGENIC EFFECT OF DIMETHOXYBENZIDINE, DICHLOROBENZIDINE, DIMETHYLBENZIDINE AND 4-AMINOBIPHENYL
Toxicology Research Projects Directory, Vol.04 iss.12 1979

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Toxicology Research Projects Directory, Vol.04 iss.07 1979

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Occupational exposure to aromatic amines: benzidine and benzidine-based dyes.
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TSCA Chemical Assessment Series Preliminary Risk Assessment, Phase 1: Benzidine, Its Congeners and Their Derivative Dyes and Pigments
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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NTP No. 10105-J
and/or Control No: NCI No. C60015

PROJECT TITLE:

Carcinogenesis Bioassay of Turmeric Oleoresin (Curcumin)

INVESTIGATOR(S):

Dr. C. K. Grieshaber

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code: Mason Research Institute
Worcester, MA 01608

PERIOD FOR THIS NRP:

Start Date: August 1979
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, turmeric oleoresin (curcumin) is being administered to rats and mice via the feed. Prechronic testing began during March 1982.

CAS Registry No.
Turmeric oleoresin (curcumin) 8024-37-1
Curcumin 458-37-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SOILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Absorption and tissue distribution of curcumin in rats.
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SUPPORTING ORGANIZATION:

National Toxicology Program
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SUPPORTING ORGANIZATION NUMBER(S):

Contract No. NTP No. 10824-H
and/or NCI No. C56666
Grant No.

PROJECT TITLE:

Carcinogenesis Bioassay of Allyl Glycidyl Ether

INVESTIGATOR(S):

Dr. G. Boorman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
Battelle Pacific Northwest Laboratory
Richland, WA 99352

PERIOD FOR THIS NRP:

Start Date: December 1979
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, allyl glycidyl ether, a solvent, is being administered to rats and mice by inhalation. Chronic testing began during May 1982.

CAS Registry No.
Allyl glycidyl ether 106-92-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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MUTAT RES; 89 (4). 1981. 269-282.

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Common No: NTP No. 10087-A
and/or Control No: NCI No. C56133

PROJECT TITLE:

Carcinogenesis Bioassay of Benzaldehyde

INVESTIGATOR(S):

Dr. W. M. Kluwe

DEPARTMENT (SPECIALTY, SCHOOL OR DIVISION)

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

Southern Research Institute
Birmingham, AL 35205

PERIOD FOR THIS NRP:

Start Date: November 1978
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, benzaldehyde is being administered to rats and mice by gavage. Chronic testing began during January 1982.

CAS Registry No.
Benzaldehyde 100-52-7

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No and/or Control No: NTP No. 10093-S
NCI No. C55867

PROJECT TITLE:

Carcinogenesis Bioassay of d-Carvone

INVESTIGATOR(S):

Dr. J.L. McCoy

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address Including Zip Code:
International Research and
Development Corporation
Mattawan, MI 49071

PERIOD FOR THIS NRP:
Start Date: August 1978
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, d-Carvone, used in cosmetics, is being administered to rats and mice via gavage. Chronic testing began during June 1982.

CAS Registry No.
d-Carvone 2244-16-8

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SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No. and/or, Grant No.: NTP No. 10156-D
NCI No. C55765

PROJECT TITLE:

Carcinogenesis Bioassay of Diphenylhydantoin (Phenytoin)

INVESTIGATOR(S):

Dr. R. Chhabra

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
Battelle Columbus Laboratory
Columbus, OH 43201

PERIOD FOR THIS NRP:

Start Date: August 1979

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, diphenylhydantoin (phenytoin), used in pharmaceuticals, is being administered to rats and mice in their feed. Chronic testing began during March 1982.

CAS Registry No.
Diphenylhydantoin (Phenytoin) 57-41-0

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SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NTP No. 10466-C
NCI No. C03372

PROJECT TITLE:

Carcinogenesis Bioassay of Ethylenethiourea

INVESTIGATOR(S):

Dr. R. Chhabra

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
Battelle Columbus Laboratory
Columbus, OH 43201

PERIOD FOR THIS NRP:

Start Date: August 1979

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, ethylenethiourea, used in pesticides, is being administered to rats and mice via the feed. Chronic testing began during August 1982.

CAS Registry No.
Ethylenethiourea 96-45-7

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10119-H
NCI No. C56202

PROJECT TITLE:
Carcinogenesis Bioassay of Furan

INVESTIGATOR(S):
Dr. R. Irwin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address Including Zip Code. Southern Research Institute
Birmingham, AL 35205

PERIOD FOR THIS NRP:
Start Date: November 1978
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (19 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, furan is being administered to rats and mice by gavage. Chronic testing began during May 1982.

CAS Registry No.
Furan 110-00-9

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QUARTERLY INDEX OF COMPOUNDS

This quarterly index lists compounds under test and those for which tests have been completed and published. The index will be updated and reprinted in the December, 1982 issue. Citations for compounds announced as under test give the issue number and page for TOX-TIPS. Those for which testing has been completed and published cite the journal or other report in which test data can be found.

National Toxicology Program/National Cancer Institute Bioassay Reports may be ordered from the National Technical Information Service, Springfield, Virginia 22161, using the PB-number cited.

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NICKEL IN THE HUMAN ENVIRONMENT

LYON, 8 - 11 March 1983

The symposium will take place at the

INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

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The participating organizations are all concerned about possible hazards associated with chronic exposure to nickel and its compounds, and the symposium will aim to contribute to an up-to-date evaluation of the known biological effects of nickel.

Participants from scientific institutions and industry, covering clinical and experimental disciplines, and especially epidemiology have been invited.

It is hoped that, by discussion between all those involved, the symposium will assist in the definition of the problem and reinforce protective action at the national and international level within the competence of each of the sponsoring organizations.

The proceedings will be conducted in English and French with simultaneous translation facilities, and will subsequently be published both in French and English.

Individuals and organizations wishing to be represented should write to the organizing secretary Dr W. Davis, IARC, 150 cours Albert Thomas, 69372 Lyon Cedex 08, France.

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METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

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JOURNAL LITERATURE

Aplin, J.D., and Hughes, R.C. Cell adhesion on model substrata: threshold effects and receptor modulation. *J Cell Sci, 50,* 89-103, 1981.

Cells adsorbed to glass require a threshold concentration of glass-immobilized protein if they are to present a well-spread morphology. For some tests of toxic effects of substances on cells, adsorption can be an important factor. This article proposes a model of the events leading to a well-spread morphology.

Sliwinska-Przyjemska, H. and Pilawska, H. Evaluation of liver cell efficiency, based on selected laboratory tests. *Med Pr, 32,* 197-94, 1981.

Knox, P., Ingarfield, S.L. and Pflug, J.J. The effect of human peripheral lymph on cell growth *in vitro*. *Biosci Rep, 1,* 963-70, 1981.

Peripheral lymph from adult humans promotes the growth of cells in culture more efficiently than human plasma. The low density lipoproteins present in plasma may be filtered out by the capillary endothelium. Such factors may be of importance in evaluating the effects of various chemicals upon cell growth in culture and especially in comparing the results from different laboratories.

Chessebeuf, M., et al. Combination of quadropolar computerized gas chromatography-mass spectrometry techniques and cell culture systems from rodent and human liver for drug metabolism and pharmacology. *Anal Chem Symp Ser; Iss 7, Recent Dev Mass Spectrom Biochem Med Environ Res,* 123-45, 1981.

This report demonstrates the use of epithelial liver cell culture for toxicological as well as pharmacological and metabolic studies on drugs. The necessary conditions for culturing rat and liver cells are described. Results from a study on fenofibrate are also given.

Swaiman, K.F., et al. A method for large-scale production of mouse brain cortical cultures. *Brain Res, 255,* 361-9, 1982.

> Cultures of fetal brain tissue are of importance in tests of neurotoxicity of chemicals. Large numbers of very similar cultures for studies of toxicity and mechanism of action of neuroactive compounds can be established. The presence of neural tissue can be documented both by light microscopy and by studies of ultrastructure. The similarity of cultures can be satisfactorily demonstrated by comparison of cell counts, protein concentrations, and levels of activity of choline acetyltransferase.

Hoegberg, J., et al. Drug actions in cell culture: the metabolism of toxic substances in isolated hepatocytes. *Adv Pharmacol Ther Proc Int Congr 8th, 3,* 141-9, 1982.

> A review of the metabolism of selenite and of $CHCl_3$ in isolated hepatocytes. The discussion deals with the effects of these compounds on GSH turnover. Twenty-six references are included.

Conference on the ferret as an alternative species in teratology and toxicology, June 25-26, 1981, Stanford, California. *Teratology, 24,* P1A-18A, 1981.

Korhonen, A., Hemminki, K. and Vainio, H. Application of the chicken embryo in testing for embryotoxicity: thiurams. *Scand J Work Environ Health, 8,* 63-8, 1982.

> This paper presents a protocol for testing toxicity of chemicals using chicken embryos. The injection was made on day three and the embryos continuously monitored until day 14 to detect deaths before maceration occurred. Dead embryos frequently showed multiple malformations. "The following parameters of embryotoxicity were used: early deaths (spanning the first 2 days after injection),

late deaths with malformed embryos, late deaths with nonmalformed embryos, and malformed survivors." Of the thiurams, tetramethylthiuram disulfite was the most embryotoxic and tetramethylthiuram disulfide the least.

Feldman, R.G., Ricks, N.L. and Baker, E.L. Neuropsychological effects of industrial toxins: a review. *Am J Industr Med, 1,* 211-27, 1980.

Nervous system function must be quantitatively measured to evaluate the extent and nature of injury following exposure to neurotoxic agents. This review deals especially with the application of such tests in an industrial setting and the factors which affect the use of such tests. Standardized testing has appreciably increased our understanding of the effects of neurotoxins. Both the clinical experience of the authors and the pertinent medical literature contribute to the discussion. The specific effects of lead, carbon disulfide, trichloroethylene, perchloroethylene, mercury, styrene and pesticides are described in detail.

Stebbins, W.C. Concerning the need for more sophisticated animal models in sensory behavioral toxicology. *Environ Health Perspect, 44,* 77-85, 1982.

Not only are laboratory animal models for screening the effects of toxic substances upon sensory behavior necessary but also "...more thorough and quantitative tests..." are required. Such tests are necessary to mirror the complexity of day-to-day life in terms of environmental conditions and demands. It can be expected that a greater complexity of stimulus conditions and behavioral response will more accurately reflect the condition of the central nervous system processes involved. Acoustic tests and the responses in the guinea pig and the monkey are described in this article. Such techniques, the author feels, could easily be modified to measure even more sophisticated behaviors such as sound localization.

Thomas, W.G. Clinical assessment of auditory dysfunction. *Environ Health Perspect, 44,* 67-75, 1982.

> Many toxic substances have deleterious effects on the auditory system. In general these are high frequency hearing loss which is progressive as a function of frequency. This deficit may be accompanied by tinnitis and occasionally by vertigo. A combination of classical and new audiological tests such as are used in clinical assessment of hearing are useful in specifying the site of the lesion in the cochlea although giving little information on pathology or etiology.

Shinkman, P.G., Isley, M.R. and Rogers, D.C. Newer laboratory approaches for assessing visual dysfunction. *Environ Health Perspect, 44,* 55-62, 1981.

> The use of analyses of the visual cortical receptive field (RF) at the single cell level has great possibilities as a screening tool for neurotoxicity. Since the demonstration that exposure of kittens during the critical period to "...altered visual environments..." can be selective in its effect upon particular classes of RF's, many new methods to measure this phenomenon have been proposed. The current trend is toward a multidisciplinary combination of approaches. The techniques reviewed in this paper are adaptable to studying neurotoxic effects in the monkey or the cat. "In fact some toxicants might produce a general degradation of RF properties akin to the electrophysiological results reported for long-term dark rearing or binocular deprivation."

ENVIRONMENTAL PROTECTION AGENCY PROJECT SUMMARIES

Available from the National Technical Information Service, Springfield, VA 22161 Telephone 703-487-4650.

Russell, L.B. et al. Evaluation of mutagenic effects of diesel emmissions. I. Tests for heritable and germ-cell effects in the mouse. EPA-600/S1-81-056, Sept 1981. NTIS Order No. PB81-235 814.

> This project considers six subprojects: 1) Test for heritable point mutations in male mice; 2) Test for induction of dominant lethals in male mice; 3) Test for induction of heritable translocations in male mice; 4) Test for induction of genetic effects and oocyte killing in females; 5) Test for dominant lethal induction in female mice; 6) Test for effects of spermatogonial survival in the mouse.

Edgerton, T.R., Moseman, R.F. and Wright, L.H. Method development for the assessment of possible human exposure to pesticides and industrial chemicals. EPA-600/S1-81-024, Apr 1981. NTIS Order No. PB81-175 796.

Herman. Z.S. et al. Chronic toxicity of lead and cadmium: II. Changes in the central nervous system of F1 generation of rats after chronic intoxication with lead and cadmium. EPA-600/S1-81-013, Mar 1981. NTIS Order No. PB81-150 989

Massaro, E.J. et al. Sensitive biochemical and behavioral indicators of trace substance exposure: Part 1. Cerium. EPA-600/S1-81-011, Mar 1981. NTIS Order No. PB81-150 765.

GOVERNMENT REPORTS

Wolthuis, O.L. and Van Raalte, H.G.S. Behavioral toxicology: Experimental Methods and results in man. *Govt Reports Announcements & Index (GRA&I)*, Issue 14, 1982, NTIS Order No. PB82-181389.

Behavioral test methods may be used to detect defects in the brain, and epidemiological studies may make use of such methods to good advantage. This report contains comments, a brief summary, and in some cases, a conclusion following each section. An overall conclusion is reached that such tests are sensitive indicators of CNS toxicology and "...may detect impairment in otherwise asymptomatic workers." The most efficient tests appear to be those which "...measure integration of functions." "Simple and choice reaction time, psychomotor and sensorimotor tasks, the Santa Anna dexterity test, and visual short-term memory tests are possible choices." Tests such as these are not specific for the compound to which the subject may have been exposed.

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Contract No. and/or Control No.: NTP No. 10120-F
NCI No. C56177

PROJECT TITLE:

Carcinogenesis Bioassay of Furfural

INVESTIGATOR(S):

Dr. R. Irwin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
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Start Date: November 1978

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PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, furfural is being administered to rats and mice by gavage. Chronic testing began during March 1982.

CAS Registry No.
Furfural 98-01-0

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The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Cakrtova E ; Flek J
Evaluation of furfural exposure level with biological exposure tests
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NOTICE OF RESEARCH PROJECT

TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No. and/or Control No: NTP No. 10161-R
NCI No. C60106

PROJECT TITLE:

Carcinogenesis Bioassay of Quercetin

INVESTIGATOR(S):

Dr. J. L. McCoy

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
Mason Research Institute
Worcester, MA 01608

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, quercetin, used in dyes, is being administered to rats via the feed. Chronic testing began during June 1982.

CAS Registry No.
Quercetin 117-39-5

TOX-TIPS OCTOBER 1982 77-15

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NOTICE OF RESEARCH PROJECT
TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NTP No. 10086-W
NCI No. C55981B

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Azodicarbonamide

INVESTIGATOR(S):

For further information, contact

Dr. L. Birnbaum

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Pending:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for the chronic bioassay have been cancelled as of May 1982 because an effective exposure level cannot be generated. The chemical is used in rubber.

CAS Registry No.
Azodicarbonamide 123-77-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10091-J
NCI No. C56008

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of (-)-Beta-Cadinene

INVESTIGATOR(S):
For further information, contact

Dr. M. Powers

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for chronic testing of (-)-beta-cadinene, used in foods, have been cancelled as of January 1982. Minimal subchronic effects were demonstrated.

CAS Registry No.
(-)-beta-Cadinene 523-47-7

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The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NTP No. 10101-T
NCI No. C05210

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Chlorpromazine Hydrochloride

INVESTIGATOR(S):

For further information, contact

Dr. J. C. Lamb

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National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for testing of chlorpromazine hydrochloride, a drug, have been cancelled because the Food and Drug Administration has adequate test data.

CAS Registry No.
Chlorpromazine hydrochloride 69-09-0

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Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NTP No. 10060-G
and/or
Control No: NCI No. 108-86-1

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Bromobenzene

INVESTIGATOR(S):

For further information, contact

Dr. W. M. Kluwe

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address.
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PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for the chronic testing of bromobenzene have been cancelled as of January 1, 1982, because of inadequate subchronic studies. (See also TOX-TIPS, 46-15.)

CAS Registry No.
Bromobenzene 108-86-1

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

PIENTA RJ
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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NTP No. 10112-F
NCI No. C60048

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Diethyl Phthalate

INVESTIGATOR(S):

For further information, contact

Dr. W. M. Kluwe

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for the chronic testing of diethyl phthalate have been cancelled, as of February 1982, because adequate class data already exists. (See also TOX-TIPS 57-31.)

CAS Registry No.
Diethyl phthalate 84-66-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NOTICE OF RESEARCH PROJECT
TOX-TIPS

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National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10488-A
NCI No. C50668

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of 4,4'-Diphenylmethane Diisocyanate

INVESTIGATOR(S):
For further information, contact

Dr. J. C. Lamb

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PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for further testing of 4,4'-diphenylmethane diisocyanate have been cancelled as of February 1982. Rationale for termination is based upon difficulty in dose preparation and inadequate subchronic studies. (See also TOX-TIPS, 52-33.)

__CAS Registry No.__
4,4'-Diphenylmethane diisocyanate 101-68-8 TOX-TIPS OCTOBER 1982 77-27

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No. and/or Control No.: NTP No. 10190-X
NCI No. C60402

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Ethylenediamine

INVESTIGATOR(S):

For further information, contact

Dr. J. French

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PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Chronic testing of ethylenediamine has been deferred as of January 1982 because an industrial study is in progress.

CAS Registry No.
Ethylenediamine 107-15-3

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

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Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No. and/or Control No.: NTP No. 10002-S
NCI No. C02799

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Formaldehyde

INVESTIGATOR(S):

For further information, contact

Dr. R. Maronpot

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Start Date:

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Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for chronic testing of formaldehyde were cancelled in January 1982 because of the existence of an adequate CIIT study.

CAS Registry No.
Formaldehyde 50-00-0

TOX-TIPS OCTOBER 1982 77-31

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NOTICE OF RESEARCH PROJECT

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Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NTP No. 10121-J
NCI No. C56224

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Furfuryl Alcohol

INVESTIGATOR(S):

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Start Date:

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Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for chronic testing of furfuryl alcohol were cancelled in February 1982 in preference for furfuryl. (See TOX-TIPS, 77-13.)

CAS Registry No.
Furfuryl alcohol 98-00-0

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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ANNOTATED BIBLIOGRAPHIES ON CURRENT TOPICS IN TOXICOLOGY

Federal organizations concerned with toxic substances share a common need for basic information about chemical substance(s) and related topics. In recognition of this, several government agencies have joined in establishing the Information Response to Chemical Concerns (IRCC) Project. One objective of this Project is to produce annotated bibliographies on current topics in toxicology. These bibliographies are prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine and published by the Federation of American Societies for Experimental Biology.

The IRCC Project is sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Diesease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The following annotated bibliographies are now available.

NLM/TIRC-80/1 HEALTH AND ENVIRONMENTAL EFFECTS OF ACID RAIN. *An abstracted literature collection 1966-1979.* N. S. Dailey and S. G. Winslow, Toxicology Information Response Center, March 1980. 202 pages. $15.00 postpaid.

Major subject categories include: *Atmospherics; Aquatic and Terrestrial Environmental Effects; Health Effects; Measurement Methods; Modeling.* A listing of current research projects, including a brief description, sponsor and principal investigator, is provided at the end of the bibliography.

NLM/TIRC-80/2 ASBESTOS IN AIR. *A bibliography with abstracts 1964-1980.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, July 1980. 52 pages. $7.00 postpaid.

This bibliography includes references pertaining to quantitative methods of determining airborne asbestos particles and quantitative levels of atmospheric asbestos fibers. A permuted title index (KWOC) is also provided.

NLM/TIRC-80/3 CHEMICAL WASTE DISPOSAL—Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes. *A selected bibliography with abstracts 1964-1979.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, November 1980. 82 pages. $10.00 postpaid.

References are categorized in the following topical areas: *Adverse Effects* on Aquatic Species, Terrestrial Species and Vegetation; *Methods of Disposal* including burial, injection, landfill, spray and water; *Radioactive Waste Disposal; Environmental Impact* including analysis, monitoring, identification, environmental contamination and transport; *Health Effects* including biological studies, toxicity, tissue accumulation and mortality data for aquatic and terrestrial animals.

NLM/TIRC-80/4 HEALTH ASPECTS OF UREA/FORMALDEHYDE COMPOUNDS. *A selected bibliography with abstracts 1963-1980.* N. P. Drago, J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, December 1980. 52 pages. $7.50 postpaid.

Each of the 134 references contains a citation in alphabetical order by author and an abstract where available. A title index is also provided. A number of the references (44%) pertain to urea-formaldehyde compounds used in home insulation and in the fabrication of construction materials.

NLM/TIRC-81/1 TOXICITY OF VANADIUM COMPOUNDS. *A Bibliography with Abstracts 1965-1980.* N. S. Dailey, S. A. Mashburn and S. G. Winslow, Toxicology Information Response Center, July 1981. 100 pages. $15.00 postpaid.

This report was produced primarily because of concern for the effects of potential exposure to vanadium compounds associated with synthetic fuel processes. The 261 references each contain a citation as well as an abstract where available. A title index and chemical name index are also provided.

NLM/TIRC-81/2. THE EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE IMMUNE SYSTEM. *A selected bibliography with Abstracts, 1969-1980.* By S. G. Winslow, TIRC, Oak Ridge National Laboratory. November 1981, 78 pages, $10.00 postpaid.

The report contains 216 references, each containing a citation (in alphabetic order by author), an abstract (where available), chemical name(s), and species used. Several indices (chemical name, species, and title) are provided. Sources searched included ten DIALOG^R files plus MEDLINE and TOXLINE.

NLM/TIRC-82/1. HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM. *A selected bibliography with Abstracts, 1963-1981.* By J. G. Pruett and S. G. Winslow. Toxicology Information Response Center, October 1982. 62 pages. $10.00 postpaid.

The report contains 305 reference, including citations on occupational or inadvertent (environmental) exposure to chemicals. Each listing contains a citation, an abstract (where available), chemical name(s) (if specified), and keywords. Information concerning current research projects and reviews are in separate sections at the end of the bibliography. A total of ten DIALOG^R and MEDLARS^R sources were searched.

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DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

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PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

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Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

Performing Organization

Enter name of organization where work is actually being done.

Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

Project Summary

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

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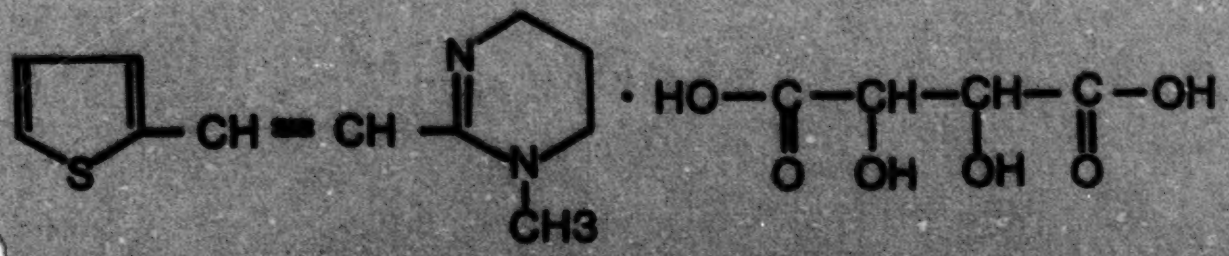

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TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

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Environmental and Related Programs

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TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

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FROM THE EDITOR

The Specialized Information Services (SIS) Division of the National Library of Medicine has developed a series of user aids describing the Toxicology Information Program's online databases and other projects. Materials on TOXLINE, CHEMLINE, RTECS, and the Toxicology Data Bank (TDB) are available for those interested. These various products are geared to non-users as well as experienced database searchers.

To learn more about how SIS can help yoy meet your information needs, write or call:

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Carol B. Haberman
EDITOR, TOX-TIPS

ENVIRONMENTAL TERATOLOGY INFORMATION CENTER

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Oak Ridge, TN 37830

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ENVIRONMENTAL TERATOLOGY INFORMATION CENTER

The Environmental Teratology Information Center (ETIC) was organized in 1975 at the Oak Ridge National Laboratory (ORNL) by the National Institute of Environmental Health Sciences. Its purpose is to collect, organize, and disseminate information on the evaluation of chemical, biological, and physical agents for teratogenic activity. The information in this file is available to individual researchers and physicians, as well as institutions and government research and regulatory agencies. Easy access to this literature facilitates health assessment, research planning, and the prevention of duplication of effort in the field of environmental teratology.

Information in the ETIC file has been drawn from over 2600 sources in the open literature, 15% of which are in languages other than English. These reports relate to teratogenicity of dietary deficiencies; maternal conditions; and chemical, biological, and physical agents in warm-blooded animals. The main focus is on the administration of an agent to a pregnant animal and examination of the offspring at or near birth for structural or functional anomalies. In compling this information ETIC scans key journals as well as many secondary sources and has online access to many computerized data bases.

ETIC is much more than a bibliographic file. There is information on thousands of unique chemicals, and all technical information is indexed for ease and versatility of retrieval. The indexing scheme allows for the addition of new fields as needed. Included in the indexed information is the following, when provided in the article:

Taxonomic and common name and strain of test object
Organ type or embryo cultured
End point examined in offspring
Chemical names or abbreviations
Chemical Abstracts Service (CAS) Registry Numbers
Text abstracts (added on a selective basis)

The ETIC file is available online through the National Library of Medicine TOXLINE file and the U.S. Department of Energy RECON system.

ETIC and EMIC (Environmental Mutagen Information Center) are building a series of auxiliary files containing information related to but not included in either master file. These files are interrelated for searching purposes. The Agent Registry File (ARF), an expansion of a subset of the ETIC and EMIC master files, contains synonyms, formulae, and uses for thousands of unique chemicals, all linked by CAS Registry Numbers. The Animal Information File (AIF) includes strain characteristics and genetic background of laboratory animals. Other auxiliary files include ETIC's Teratology Data Extraction File and the Controlled Vocabulary File. There are also EMIC's Cell Transformation File, Aneuploidy File, Environmental Protection Agency Qualitative Gene-Tox File, and Genetic Toxicology Data Extraction File.

The ETIC staff includes biologists, chemists, linguists, information scientists, and clerical personnel. This staff works closely with the EMIC staff and shares support personnel from ORNL's Information Division and the Computer Sciences Division.

Special services available from ETIC include literature surveys; indexed bibliographies; and bibliographic references on specific agents, organisms, or other indexed terms. Specific questions are answered as time permits.

Oak Ridge National Laboratory is operated by Union Carbide Corporation under Contract W-7405-eng-26 with the U.S. Department of Energy.

METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

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Toxicology Information Program
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JOURNAL LITERATURE

Stebbins, W.C. Concerning the need for more sophisticated animal models in behavioral toxicology. *Environ Health Perspect.*, *44*, 77-85, 1982.

The development of animal models for use in testing sensory behavioral toxicology and the analysis and evaluation of "...threshold levels of impairment" is not sufficient. Tests that are more sensitive and also more quantitative are needed to test the complexity of responses as they are present in day-to-day life. They should be able to monitor not only the state of the receptor organ but also the nervous processes necessary to produce a response. This paper describes techniques for analyzing sensory behaviors in auditory behavior such as intensity discrimination and frequency selectivity. With some modification, these methods can be used to follow more intricate acoustic behaviors such as sound localization and the preception of frequency modulated acoustic signals which are a necessary part of speech and communication sounds.

Winneke, G., Lilienthal, H. and Werner, W. Task dependent neurobehavioral effects of lead in rats. *Arch Toxicol [Suppl] 5*, 84-93, 1982.

This article describes how a combination of task performance and discrimination tests can be utilized to obtain a pattern of behavioral change due to low levels of poisoning and to interpret the data obtained so as to explain the mechanism of action of the toxic substance. "If learning and retention in animals is taken as a measure of cognitive performance, neurobehavioral lead-toxicity cannot easily be explained in terms of cognitive deficit. An interpretation in terms of emotional reactivity or behavioral disinhibition would then seem more convincing, which covers the results from activity studies as well."

Prior, G.T. et al. Importance of schedule of exposure to hexane in causing neurotoxicity. *Neurobehav Toxicol Teratol, 14*, 71-8, 1982.

Repeated brief exposure to hexane at high concentrations (24,000-48,000 ppm) for 6-12 times a day, five days a week for 18 weeks were less effective than those continuously exposed to 1000 ppm five days a week for 11 weeks.

> The most severe effects were in animals that received 48,000 ppm for twenty-four 10 second periods for 4 additional weeks after the original 18 week period. This study illustrates the importance not only of total exposure but also the time schedule on which it is given.

Uphouse, L., McLean, S., and Russell, M. Stability of CNS binding sites under various conditions. *Neurotoxicology, 2,* 533-40, 1981.

> Of the variables studied, i.e., method of sacrifice, treatment of tissues and gavage of neurotransmittor receptors in the CNS, only freezing of the tissue which decreased protein content of the brain and indirectly decreased estimates of binding sites per brain weight was of importance. Serotonin binding sites were especially affected by freezing. "The potential importance of presumably random variables in neurotoxicology is discussed."

Esler, M. et al. Biochemical quantification of sympathetic nervous activity in humans using radiotracer methodology: fallibility of plasma noradrenaline measurements. *J Cardiovasc Pharmacol, 4,* 152-7, 1982.

> Concentrations of noradrenaline in plasma do not accurately indicate activity of the sympathetic nervous system if the clearance rate of this neurohormone are abnormal. Such instances occur in patients with hypertension who receive beta-adrenergic blockers on a regular basis. Clearance also is affected by age resulting in a rise in plasma noradrenaline concentration.

Turker, R.K. Pharmacological evaluation of a new test organ for the dynamic bioassay of neurotransmitter release due to sympathetic stimulation. *Doga, Sari A; Vol 5, Issue Ataturk Ozel Sayisi,* 69-75, 1981.

Transverse strips from rabbit stomach and aorta were used to follow the release of neurotransmitter following "...periarterial stimulation of the isolated perfused rabbit kidney," dose and frequency responses were obtained in both organ strips. The value of such preparations, especially the strip from the stomach, in the bioassay of noradrenaline is discussed.

Richardson, R.J. Toxicology of the nervous system. *Toxicol.: Princ. Pract; Vol 1,* 107-43, 1981.

A review of nervous system chemical toxicity with discussion and many references. Health hazards to the nervous system are also considered.

Sato, S., Susimoto, S., Chiba, S. An electrophysiological method for detecting visual toxicity in unrestrained rats. *Jpn J. Pharmacol., 32,* 489-97, 1982.

Methods are described for recording the electroretinogram (ERG) and visual evoked potential (VEP) in unrestrained rats. These methods were used to study long-term toxicity of diaminodiphenoxybutane. In both the ERG and VEP, dose dependent decreases were obtained. The authors conclude: "Thus, this recording technique for ERG and VEP is useful for evaluating the visual toxicity of drugs in unrestrained rats."

Blough, P.M., and Young, J.S. Psychophysical assessment of visual dysfunction. *Environ Health Perspect. 44,* 47-53, 1982.

This review with 26 references discusses the various phychophysical techniques available to assess visual function in nonhuman animals. "Problems of particular interest for toxicological research include control of physical stimulus, choice of species, separation of stimulus from attentional effects, response bias, and pre- and post-training efficiency."

Heywood, R. Histopathological and laboratory assessment of visual dysfunction. *Environ Health Perspect., 44,* 35-45, 1982.

This review covers the "...currently available methods..." for evaluating ocular toxicity. The author stresses the point that "...mechanisms of ocular toxicity are poorly understood..." and also points out the limitations of animal studies in this field.

Shinkman, P.G., Isley, M.R. and Rogers, D.C. Newer laboratory approaches for assessing visual dysfunction. *Environ Health Perspect., 44,* 55-62, 1982.

Analysis of the single cell in terms of the visual cortical receptive field (RF) is stressed in this article. Particular classes of RF's can be affected during development while others are spared. The study of neurotoxic insult to the cortical visual neurons can be approached by the techniques described here. The similarity of degradation of RF properties to the results of dark rearing and binocular deprivation are summarized.

New toxicology for old. A critique of accepted requirements and methodology. Proceedings of the European Society of Toxicology, Dublin, August 17-18, 1981. *Arch Toxicol [Suppl] 5,* 1-384, 1982.

Gobinet, G. The Council of Europe approach to toxicity testing and toxicological evaluation. *Arch Toxicol [Suppl] 5,* 45-7, 1982.

The Council of Europe, an international and intergovernmental organization, has prepared guidelines for the testing and evaluation of pesticides, flavorings, plastic food packaging as well as cosmetics and their ingredients. These guidelines are intended as models and are open to revision as needed.

Smeets, J. The EEC policy in the hazard assessment of new chemicals. *Arch Toxicol [Suppl] 5,* 33-9, 1982

> The Council of Ministers of the European Communities (EEC) has adopted legislation concerning the classification, packaging, and labelling of "...dangerous substances." The pre-marketing technical dossier requires test results, physiochemical properties, and toxicological and eco-toxicological parameters.

Fender, H. and Malz, W. A simple test for repair kinetic studies of mammalian DNA applied to normal and CLL-lymphocytes. *Stud Biophys, 78,* 79-85, 1980.

Ulreich, J.B. and Chvapil, M. Altered activity in cultured cells caused by contaminants in tubes widely used for blood collection and serum preparation. *In Vitro, 18,* 117-21, 1982.

> Tubes used for drawing blood were shown to contain substances extremely toxic to cell cultures, and in one case (fibroblasts) to be stimulating. "It is, therefore crucial in a properly controlled experiment using serum *in vitro* to collect blood in tubes that exert no toxic or stimulatory effects in the assay or, at least to be consistent in one's choice of tube." In this study none of the tubes used to store serum showed any effect.

Bolton, D.C. et al. An *in vitro* system for studying the effects of ozone on mammalian cultures and viruses. *Environ Res 27,* 466-75, 1982.

Demarini, D.M., Plewa, M.J., and Brockman, H.E. Use of four short-term tests to evaluate the mutagenicity of municipal water. *J Toxicol Environ Health, 9,* 127-140, 1982.

Four short-term tests were used to test the mutagenicity of drinking water in Bloomington, Illinois; namely, reverse mutation in a prokaryote, forward mutation in a mold, mitotic gene conversion in a yeast and reverse mutation in maise. "The advantages and disadvantages of the tests and protocols are discussed in terms of their applicability to the study of the mutagenicity of drinking water. This study may be applicable to humans."

Greim, H. et al. Threshold levels in toxicology: significance of inactivation mechanisms. ***Adv Exp Med Biol, 136, Pt B,*** **1389-98, 1981.**

At low levels of toxicity, toxic effects may be prevented by inactivation of toxic intermediaries. However at higher levels, the inactivation may be overcome. Such results influence the dose effect relationship. This paper cites examples of such effects of inactivation. "It is concluded that information on the metabolism of chemicals is essential for interpretation of toxicity studies in animals and their relevance to man."

Breimer, D.D. Measurement of urinary metabolites of xenobiotics as a non-invasive technique in toxicology. ***Arch Toxicol [Suppl] 5,*** **162-178, 1982.**

Three major advantages can be obtained by measurement of the metabolites of xenobiotics. These are: 1) knowledge of the biotransformation of the xenobiotic; 2) the use of metabolite monitoring in exposure tests and; 3) measurement of the activity of various metabolic pathways. It must also be considered that large individual differences are possible in the metabolism of xenobiotics. Such differences may have profound toxicological implications.

Martin, A.D., and Papworth, D.S. Assessment of mammalian toxicity of pesticides and other chemicals--flexible guidelines or rigid protocols? ***Arch Toxicol [Suppl]*** **5, 17-28, 1982.**

Zbinden, G. Newer diagnostic procedures in chronic toxicity studies in rats. *Arch Toxicol [Suppl] 5*, 141-51, 1982.

> Examples are given of procedures available ranging in complexity from bleeding time to cardiac output and catecholamine-arrhythmia threshold. Aspiration of liver by means of fine needles is also discussed as a technique for early diagnosis of liver lesions. Discrimination in the use of these procedures is required; they should only be used "..to test a clearly stated scientific hypothesis."

Gad, S.C. Statistical analysis of behavioral toxicology data and studies. *Arch Toxicol [Suppl] 5*, 256-66, 1982.

> Toxicological data are often analyzed by statistical procedures which "...either do not have optimal characteristics of sensitivity and power, or for which the underlying assumptions as to the nature of the data are not valid." This situation may arise either because of the lack of statistical sophistication of the toxicologist or lack of understanding by the statistician of the biological assumptions involved. The types of data or observations must first be established, i.e., scores, response rates, error rates, and time-to-end-point, as well as a special type of data obtained in teratology and reproduction studies. Optimal methods may then be developed by considering all the statistical procedures currently available for anlaysis. "The underlying key to this entire process is to establish the biological and statistical nature of the data being generated and to design and analyze experiments accordingly."

Weil, C.S. Statistical analysis and normality of selected hematologic and clinical chemistry measurements used in toxicologic studies. *Arch Toxicol [Suppl] 5*, 237-53, 1982.

In the past, comparison of control and experimental groups has assumed that the data are normal. This basic assumption of normality was tested on treated and control groups from several experiments. The data included measurements of white and red cells, hemoglobin, urea nitrogen and creatinine. The data showed enough deviation from normality in terms of skewness and kurtosis that the authors were led to suggest that nonparametric statistical procedures should be used. The value of concurrent control groups in place of "historical" controls was emphasized.

Beach, J.E. The ferret for non-rodent toxicity studies--a pathologist's view. *Arch Toxicol [Suppl] 5*, 279-82, 1982.

Experience with the use of the ferret for non-rodent drug studies suggest its usefulness for routine toxicity testing. This species is amenable to dosing by gavage and shows gastric damage similar to that seen in the dog. Certain peculiarities of background pathology must be noted.

ANNOTATED BIBLIOGRAPHIES ON CURRENT TOPICS IN TOXICOLOGY

Federal organizations concerned with toxic substances share a common need for basic information about chemical substance(s) and related topics. In recognition of this, several government agencies have joined in establishing the Information Response to Chemical Concerns (IRCC) Project. One objective of this Project is to produce annotated bibliographies on current topics in toxicology. These bibliographies are prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine and published by the Federation of American Societies for Experimental Biology.

The IRCC Project is sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Diesease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The following annotated bibliographies are now available.

NLM/TIRC-80/1 HEALTH AND ENVIRONMENTAL EFFECTS OF ACID RAIN. *An abstracted literature collection 1966-1979.* N. S. Dailey and S. G. Winslow, Toxicology Information Response Center, March 1980. 202 pages. $15.00 postpaid.

Major subject categories include: *Atmospherics; Aquatic and Terrestrial Environmental Effects; Health Effects; Measurement Methods; Modeling.* A listing of current research projects, including a brief description, sponsor and principal investigator, is provided at the end of the bibliography.

NLM/TIRC-80/2 ASBESTOS IN AIR. *A bibliography with abstracts 1964-1980.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, July 1980. 52 pages. $7.00 postpaid.

This bibliography includes references pertaining to quantitative methods of determining airborne asbestos particles and quantitative levels of atmospheric asbestos fibers. A permuted title index (KWOC) is also provided.

NLM/TIRC-80/3 CHEMICAL WASTE DISPOSAL—Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes. *A selected bibliography with abstracts 1964-1979.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, November 1980. 82 pages. $10.00 postpaid.

References are categorized in the following topical areas: *Adverse Effects* on Aquatic Species, Terrestrial Species and Vegetation; *Methods of Disposal* including burial, injection, landfill, spray and water; *Radioactive Waste Disposal; Environmental Impact* including analysis, monitoring, identification, environmental contamination and transport; *Health Effects* including biological studies, toxicity, tissue accumulation and mortality data for aquatic and terrestrial animals.

NLM/TIRC-80/4 HEALTH ASPECTS OF UREA/FORMALDEHYDE COMPOUNDS. *A selected bibliography with abstracts 1963-1980.* N. P. Drago, J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, December 1980. 52 pages. $7.50 postpaid.

Each of the 134 references contains a citation in alphabetical order by author and an abstract where available. A title index is also provided. A number of the references (44%) pertain to urea-formaldehyde compounds used in home insulation and in the fabrication of construction materials.

NLM/TIRC-81/1 TOXICITY OF VANADIUM COMPOUNDS. *A Bibliography with Abstracts 1965-1980.* N. S. Dailey, S. A. Mashburn and S. G. Winslow, Toxicology Information Response Center, July 1981. 100 pages. $15.00 postpaid.

This report was produced primarily because of concern for the effects of potential exposure to vanadium compounds associated with synthetic fuel processes. The 261 references each contain a citation as well as an abstract where available. A title index and chemical name index are also provided.

NLM/TIRC-81/2. THE EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE IMMUNE SYSTEM. *A selected bibliography with Abstracts, 1969-1980.* By S. G. Winslow, TIRC, Oak Ridge National Laboratory. November 1981, 78 pages, $10.00 postpaid.

The report contains 216 references, each containing a citation (in alphabetic order by author), an abstract (where available), chemical name(s), and species used. Several indices (chemical name, species, and title) are provided. Sources searched included ten DIALOG^R files plus MEDLINE and TOXLINE.

NLM/TIRC-82/1. HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM. *A selected bibliography with Abstracts, 1963-1981.* By J. G. Pruett and S. G. Winslow. Toxicology Information Response Center, October 1982. 62 pages. $10.00 postpaid.

The report contains 305 reference, including citations on occupational or inadvertent (environmental) exposure to chemicals. Each listing contains a citation, an abstract (where available), chemical name(s) (if specified), and keywords. Information concerning current research projects and reviews are in separate sections at the end of the bibliography. A total of ten DIALOG^R and MEDLARS^R sources were searched.

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SUPPORTING ORGANIZATION:
National Institute for Occupational Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: VHO Byy 627

PROJECT TITLE:
The Sentinel Health Event (Occupational)

INVESTIGATOR(S):
Robert Mullan

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance, Hazard Evaluations, and Field Studies

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: March 1984
Annual Funding:

PROJECT SUMMARY:

The purpose of this project is the development and implementation of the Sentinel Health Event (Occupational) concept. A Sentinel Health Event is a disease, disability, or untimely death which is occupationally related and whose occurrence may serve as a warning signal that materials substitution, control measures, or personal protection may be required. During FY '82 a comprehensive list of these events was prepared by analysis of the literature and peer review. The SHE(O) list serves as a cogent occupational health surveillance and educational framework that may be used in multiple settings (NIOSH and other Federal agencies, e.g., NCHS and SSA, state agencies, industry, labor, academia, and medical care providers and intermediaries, e.g., insurance companies). The principal objectives of this project are twofold:

1. To explore the utility of the SHE(O) concept in a surveillance setting via its application to vital statistics obtained from SCANS states.
2. To assess the utility of the SHE(O) concept in medical school curricula as a means of promoting occupational health education.

Application of the SHE(O) concept will (a) promote NIOSH's goal to heighten medical care provider awareness of the importance of occupationally related death, disease, and disability, (b) promote occupational health surveillance at the state level by assisting states in developing surveillance methods based on the SHE(O) concept, and (c) assist NIOSH's mission of identifying and prioritizing areas of occupational health concerns where further investigation may be needed.

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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AM J EPIDEMIOL; 114 (2). 1981. 229-233.

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NATIONAL MARINE POLLUTION MONITORING PROGRAM
Toxicology Research Projects Directory, Vol.05 iss.02 1980

NOTICE OF RESEARCH PROJECT

TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: VMH Myy 572

PROJECT TITLE:

Investigation of Workers Exposed to 4,4'-Methylenebis(2-chloroaniline) (MOCA)

INVESTIGATOR(S):

Elizabeth Ward

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations, and
Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:

Start Date: October 1982

End Date: September 1985

Annual Funding:

PROJECT SUMMARY:

4'4-Methylenebis (2-chloroaniline)(MOCA) has been shown to be a potent carcinogen in animal studies and is structurally similar to aromatic amines, such as benzidine, known to cause bladder cancer in occupationally exposed workers. No adequate epidemiologic studies have examined MOCA's carcinogenicity in humans. At present, there is no OSHA standard for MOCA. MOCA is used as a curing agent for isocyanate containing polymers. About 33,000 U.S. workers are currently exposed, most in workplaces where 10 or fewer employees work directly with the substance.

We have proposed to establish a registry of workers exposed to MOCA at the two U.S. production facilities: the Anderson Development Company (ADC) in Adrian, Michigan, and E.I. duPont de Nemours and Company in Deepwater, New Jersey. The registry will be used for prospective surveillance of cancer incidence and mortality. Cancer incidence will be determined by notification of the cohort and mailed questionnaire.

Personnel records of the ADC company for the period of MOCA production (1968-1980) were obtained in December 1981. Records of approximately 540 individuals have been computerized using the PVC format. Social Security 941 forms have been obtained to validate the cohort, and IRS has provided current addresses. We have conducted a preliminary discussion with duPont regarding access to their records which pertain to 203 employees exposed to MOCA from 1955 to 1971. In FY'83, we plan to complete mortality follow-up of the ADC cohort and to obtain records of the duPont cohort. In FY'84, we plan to notify both cohorts that they are enrolled in the registry and to obtain data on cancer incidence by questionaire and, where necessary, telephone follow-up.

CAS Registry No.
4,4'-Methylenebis(2-chloroaniline)
(MOCA) 101-14-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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INT AGENCY RES CANCER
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WHO. IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER) MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS, VOLS. 1-20, SUPPL. 1. CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS; LYON, FRANCE, JAN. 15-17, 1979. XI+71P. WHO: GENEVA, SWITZERLAND. PAPER. ISBN 92-832-1402-1.; 0 (0). 1979 (RECD. 1980). XI+71P.

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NOTICE OF RESEARCH PROJECT
TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Institute for Occupational Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: VMH Myy 575

PROJECT TITLE:
Case Control Study of Bladder Cancer in Hamilton County, Ohio

INVESTIGATOR(S):
Kyle Steenland

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance, Hazard Evaluations, and Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: December 1984
Annual Funding:

PROJECT SUMMARY:

This study attempts to use a new methodology, the use of the city directories, to ascertain occupation. We will collect cases of deaths from bladder cancer in Hamilton County, Ohio. Controls will be deaths from causes other than bladder cancer matched on year of death, age, and race. City directories should provide a complete occupational history for most of our cases and controls. Hamilton County has traditionally had excessively high bladder cancer mortality.

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Anon
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Toxicology Research Projects Directory, Vol.06 iss.05 1981
Epidemiology Research Projects Directory, 1981

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Toxicology Research Projects Directory, Vol.05 iss.11 1980
Epidemiology Research Projects Directory, 1980

NOTICE OF RESEARCH PROJECT

TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
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8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: VMH Ayy 586

PROJECT TITLE:
Cytogenetic Assays and Analysis of Occupational Populations

INVESTIGATOR(S):
Theodore Meinhardt

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations, and
Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: September 1986
Annual Funding:

PROJECT SUMMARY:

The purpose of this project is to evaluate the potential of a chemical or physical agent, known or suspected of being a carcinogen, to produce chromosomal changes in occupationally exposed populations. These changes are used as an indication of biologic activity which can be translated to a dose-response curve over the range of occupational exposures. Two different assays, chromosomal aberrations (CA) and sister chromatid exchanges (SCE), will be used to conduct these evaluations. Currently, the cytogenetic effects of exposure to ethylene oxide (EtO) is being investigated based on a hazard evaluation request from the Oil, Chemical, and Atomic Workers Union. EtO has been shown to be mutagenic in submammalia tests systems, carcinogenic in animal bioassays, and a potential human carcinogen in two weak epidemiologic studies and producer of cytogenetic changes at higher levels of exposure. The study of EtO is underway and at least one additional cytogenetic study, and possibly a second, will be initiated during the year. Other occupational environments which are being considered for cytogenetics are those that involve exposure to radiation from depleted uranium and to exposure to ethylene dibromide. Both of these exposures are known to be carcinogenic in certain nonhuman test systems or to be carcinogenic to humans in specific occupational settings.

To conduct the research, NIOSH needs to have the capability of having cytogenetic assays performed on the blood samples from exposed and nonexposed workers as well as expertise in the appropriate analyses of these data. This capability has been acquired through an interagency agreement between NIOSH and the Department of Energy's Lawrence Livermore National Laboratories Biomedical Division where Dr. Anthony V. Carrano is overseeing such work.

CAS Registry No.
Ethylene oxide 75-21-8

TOX-TIPS NOVEMBER 1982 78-21

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NOTICE OF RESEARCH PROJECT

TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: VMH Myy 588

PROJECT TITLE:

Update of Completed Cohort Mortality Studies

INVESTIGATOR(S):

David Brown

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations, and
Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.

National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:

Start Date: October 1982
End Date: September 1985
Annual Funding:

PROJECT SUMMARY:

NIOSH has completed a number of retrospective cohort mortality studies during the past few years, many of which lacked conclusive results. The primary reasons for inconclusive results are too few deaths (low statistical power) and a short follow-up period (resulting in a short latency period). Thus, many of the original hypotheses that were tested by these studies remained unresolved questions. Examples of such studies include workers exposed to PCB's, perchloroethylene,chlorinated hydrocarbon pesticides, and styrene butadiene rubber. It is proposed that these cohorts (and others determined to be appropriate) be followed through 1980, that the additional death information be added to the file, and that the analyses be rerun.

The selected study populations will be sent to the Social Security Administration (SSA) which currently will provide information to allow follow-up through 1978. Those that SSA cannot locate (lost to follow-up) will be sent to IRS and other follow-up sources in order to determine the vital status of at least 95% of the cohort. Follow-up for 1979-1980 will be accomplished via the National Death Index (NDI) which is maintained by the National Center for Health Statistics (NCHS).

The updating of studies will provide more valid results which will in turn allow NIOSH to make better recommendations regarding the potential carcinogenic risk to workers.

CAS Registry No.

Perchloroethylene 127-18-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Scand J Work Environ Health; VOL 7 Suppl 4, 1981, P140-6

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Epidemiology Research Projects Directory, 1981

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NOTICE OF RESEARCH PROJECT

TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
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8600 Rockville Pike Bethesda, Maryland 20209
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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. C60720B
NCI No. 10203-G

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Methdilazine

INVESTIGATOR(S):
For further information, contact

Dr. D. Goldman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, Maryland 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Before instituting the chronic test phase, methdilazine, used in pharmaceuticals, was found to be unstable in feed. Plans now call for administration by gavage during chronic testing. The change became effective during April 1982. (See TOX-TIPS, May 1982, 72-31).

CAS Registry No.
Methdilazine 1982-37-2

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Br Med J; VOL 1, ISS 705, 1970, P327-30

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NOTICE OF RESEARCH PROJECT
TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10162-V
NCI No. C55845

PROJECT TITLE:

Status of p-Quinone

INVESTIGATOR(S):
Dr. C. Grieshaber

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, Maryland 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for chronic testing of p-Quinone have been cancelled as of April 1982. An alternate class member was selected.

CAS Registry No.
p-Quinone 106-51-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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INVESTIGATOR(S):

For further information, contact

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Biomedical and Environmental Special Programs Division

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Annual Funding:

PROJECT SUMMARY:

For chemicals widely manufactured by industry, some companies jointly sponsor research to avoid duplication and to pool resources. CMA's Biomedical and Environmental Special Programs Division is a vehicle for many of these collaborative efforts. New developments from the Special Programs Panels in FY 1981-1982 were reported in CHEMECOLOGY, November 1982. The following information was included on page 6 of this CMA publication:

> Arsenic - Partial analysis of data from a human epidemiologcal exposure study indicates that there may be a level below which exposure to arsenic does not cause lung cancer. Preliminary analyses show that exposure to very high levels of arsenic, rather than cumulative low-level exposures over a long period of time, could be linked to excess cancer rates in humans.
>
> CMA will sponsor analyses of all the study data.

CAS Registry No.
Arsenic 7440-38-2

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Washington, D.C. 20037

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Contract No:
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Control No:

PROJECT TITLE:

CMA Biomedical and Environmental Special Program: Benzene

INVESTIGATOR(S):

For further information, contact

Chemical Manufacturers Association
Biomedical and Environmental Special Programs Division

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

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> Benzene - A study that will compare causes of death in a group of workers who were exposed to benzene for many years with mortality of a comparable unexposed group is underway and will be completed in 1983. Ten thousand workers drawn from seven plants are under study.
>
> The study will look for evidence of any adverse health effects from benzene exposure, and is particularly concerned about leukemia incidence. Benzene is suspected to cause cancer when breathed in high concentrations.

CAS Registry No.
Benzene 71-43-2

TOX-TIPS NOVEMBER 1982 78-31

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

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RTECS DEFINED RTECS (Registry of Toxic Effects of Chemical Substances) is in the National Library of Medicine's online version of the National Institute for Occupational Safety and Health's (NIOSH) annual compilation of substances with toxic action. The original collection of data that makes up RTECS was known as the Toxic Substances List, compiled in 1971 by NIOSH in response to the Occupational Safety and Health Act of 1970. The hard copy version of RTECS is updated annually with quarterly microfiche editions available. NIOSH is responsible for the file content in RTECS, and for providing quarterly updates to NLM. RTECS currently contains toxicity data for more than 50,000 substances (1/82).

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TOX-TIPS

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FROM THE EDITOR

NIOSH has summarized its activities in the CIS program as follows:

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Carol B. Haberman

EDITOR, TOX-TIPS

ANNOTATED BIBLIOGRAPHIES ON CURRENT TOPICS IN TOXICOLOGY

Federal organizations concerned with toxic substances share a common need for basic information about chemical substance(s) and related topics. In recognition of this, several government agencies have joined in establishing the Information Response to Chemical Concerns (IRCC) Project. One objective of this Project is to produce annotated bibliographies on current topics in toxicology. These bibliographies are prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine and published by the Federation of American Societies for Experimental Biology.

The IRCC Project is sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Diesease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The following annotated bibliographies are now available.

NLM/TIRC-80/1 HEALTH AND ENVIRONMENTAL EFFECTS OF ACID RAIN. *An abstracted literature collection 1966-1979.* N. S. Dailey and S. G. Winslow, Toxicology Information Response Center, March 1980. 202 pages. $15.00 postpaid.

Major subject categories include: *Atmospherics; Aquatic and Terrestrial Environmental Effects; Health Effects; Measurement Methods; Modeling.* A listing of current research projects, including a brief description, sponsor and principal investigator, is provided at the end of the bibliography.

NLM/TIRC-80/2 ASBESTOS IN AIR. *A bibliography with abstracts 1964-1980.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, July 1980. 52 pages. $7.00 postpaid.

This bibliography includes references pertaining to quantitative methods of determining airborne asbestos particles and quantitative levels of atmospheric asbestos fibers. A permuted title index (KWOC) is also provided.

NLM/TIRC-80/3 CHEMICAL WASTE DISPOSAL– Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes. *A selected bibliography with abstracts 1964-1979.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, November 1980. 82 pages. $10.00 postpaid.

References are categorized in the following topical areas: *Adverse Effects* on Aquatic Species, Terrestrial Species and Vegetation; *Methods of Disposal* including burial, injection, landfill, spray and water; *Radioactive Waste Disposal; Environmental Impact* including analysis, monitoring, identification, environmental contamination and transport; *Health Effects* including biological studies, toxicity, tissue accumulation and mortality data for aquatic and terrestrial animals.

NLM/TIRC-80/4 HEALTH ASPECTS OF UREA/FORMALDEHYDE COMPOUNDS. *A selected bibliography with abstracts 1963-1980.* N. P. Drago, J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, December 1980. 52 pages. $7.50 postpaid.

Each of the 134 references contains a citation in alphabetical order by author and an abstract where available. A title index is also provided. A number of the references (44%) pertain to urea-formaldehyde compounds used in home insulation and in the fabrication of construction materials.

NLM/TIRC-81/1 TOXICITY OF VANADIUM COMPOUNDS. *A Bibliography with Abstracts 1965-1980.* N. S. Dailey, S. A. Mashburn and S. G. Winslow, Toxicology Information Response Center, July 1981. 100 pages. $15.00 postpaid.

This report was produced primarily because of concern for the effects of potential exposure to vanadium compounds associated with synthetic fuel processes. The 261 references each contain a citation as well as an abstract where available. A title index and chemical name index are also provided.

NLM/TIRC-81/2. THE EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE IMMUNE SYSTEM. *A selected bibliography with Abstracts, 1969-1980.* By S. G. Winslow, TIRC, Oak Ridge National Laboratory. November 1981, 78 pages, $10.00 postpaid.

The report contains 216 references, each containing a citation (in alphabetic order by author), an abstract (where available), chemical name(s), and species used. Several indices (chemical name, species, and title) are provided. Sources searched included ten DIALOG^R files plus MEDLINE and TOXLINE.

NLM/TIRC-82/1. HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM. *A selected bibliography with Abstracts, 1963-1981.* By J. G. Pruett and S. G. Winslow. Toxicology Information Response Center, October 1982. 62 pages. $10.00 postpaid.

The report contains 305 reference, including citations on occupational or inadvertent (environmental) exposure to chemicals. Each listing contains a citation, an abstract (where available), chemical name(s) (if specified), and keywords. Information concerning current research projects and reviews are in separate sections at the end of the bibliography. A total of ten DIALOG^R and MEDLARS^R sources were searched.

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METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

Compiled by Williamina A. Himwich, Ph.D.

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

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GOVERNMENT REPORTS

Dudney, C.S. et al. Use of relative toxicity for risk estimation. *Govt Reports Announcements & Index (GRA&I) Issue 21*, 1982. NTIS/DE82010200

A new method is reported by which it is possible to estimate human risk assessment based upon toxicological potency. This method takes into account the epidemio-

logical, toxicological, and basic biochemical and biophysical data. A symposium on the application of short-term bioassays in the analysis of complex environmental mixtures was held at Chapel Hill, NC USA, Jan 25, 1982.

Wyrobek, A.J. Methods for evaluating the influence of chemicals on reproductive fertility. *Govt Reports Announcements & Index (GRA&I) Issue 21,* 1982. NTIS/DE82011071

Sperm anomaly tests offer an opportunity to monitor damage to the male reproductive system and to study chemical mutagenesis. Sperm assays in man and in animals and their possible applications are discussed in this paper. The predictive value of sperm changes, the corrolation of results to carcinogenicity and to mutagenicity, and the weaknesses and advantages of sperm assay are also discussed. INSERM symposium, Corsica, France, Sep 21, 1981.

Christian, M.S. and Voytek, P.E. *In vivo* reproductive and mutagenicity tests. *Govt Reports Announcements & Index (GRA&I) Issue 21,* 1982. NTIS/PB82-221599

This review covers current *in vivo* techniques for estimating reproductive and genetic damage due to chemicals. The protocols of the various regulatory agencies in the U.S. as well as those from countries belonging to the Organization for Economic Cooperation and Development are compared. The possibilities of using mammalian *in vivo* mutagenicity data to assess human risk is also considered. This report was prepared in cooperation with the Argus Research Laboratories, Inc., Horsham, PA.

Riener, E. and Durham, W.F. Toxicology of pesticides. *Govt Reports Announcements & Index (GRA&I) Issue 21,* 1982. NTIS/PB82-226077

Five toxicological studies of pesticides conducted by the Institute for Medical Research and Occupational Health, Zagreb, Yugoslavia are reported along with the summaries of seven student theses related to work conducted by the Institute. In the first study, the reactions of two groups of esterases, namely cholinesterases and arylesterases, were studies in relation to inhibitors and substrates; in the second group, studies of pesticide residues were determined in workers' urine. The third study emphasizes residues in human milk and blood. The effects of recent changes in the protective procedures were assayed by following cholinesterase levels in the blood in the fourth study, and in the firth study the "alleged" effects of pesticides on the eyes and on vision were evaluated and discussed.

Davenport, R.J. and Glennon, J.P. Mammalian toxicology testing: Problem definition study. Part 3, Impact of future changes report. *Govt Reports Announcements & Index (GRA&I) Issue 19*, 1982. NTIS/AD-A114 711/5

The impact of changes in techniques for assessing toxicity and the regulatory changes for the period 1981-1990 were identified and analyzed. Major increases in the need for toxicology testing can be anticipated even though no more legislation is passed. Increased diversity in the professionals required to do the testing as well as in the animals and testing procedures used can be expected. Conclusions and recommendations are provided in this report as well as early warning signals of probable changes.

Chaube, S. et al. Dermatotoxicity: Selected issues in testing for dermal toxicity, including irritation, sensitization, phototoxicity, and systemic toxicity. *Govt Reports Announcements & Index (GRA&I) Issue 21*, 1982. NTIS/PB82-224320

The rabbit is the animal most frequently used for studies of dermal irritation; however, the guinea pig may also be used. The factors affecting the results of irritation tests are listed. "This review suggests a tier-like strategy utilizing pH limits. Preliminary screening in the hairless mouse may be useful in evaluating irritation potential."

Falahee, K.J. et al. Eye irritation testing: An assessment of methods and guidelines for testing materials for eye irritancy. ***Govt Reports Announcements & Index (GRA&I) Issue 21,*** **1982. NTIS/ PB82-225764**

> **The basic test for ocular materials is based upon the response of the rabbit eye to material instilled directly into it. The guidelines published recently by the Organization for Economic Cooperation and Development (OECD) and the Interagency Regulatory Liaison Group (IRLG) are essentially the same, calling for the instillation of 0.1 ml material into the eye with observations for at least 24h.**

JOURNAL REFERENCES

Gill, R.,Bal, T.S. and Moffat, A.C. The application of derivative UV-visible spectroscopy in forensic toxicology. *J Forensic Sci Soc, 22,* 165-71, 1982.

> Data from UV-spectroscopy appears to have "...considerable potential..." in forensic toxicology when presented in the derivative mode. In such cases the data could aid in the identification of compounds with similar spectra. The limitations of the use of wave-length shifts as produced by spectrometers that depend upon electronic differentiation are discussed.

Grahame-Smith D.G. Preclinical toxicology testing and safeguards in clinical trials. *Eur J Clin Pharmacol, 22,* 1-6, 1982.

O'Malley, K. and Kelly, J.G. Toxicity testing in relation to aging. *Arch Toxicol [Suppl] 5,* 59-63, 1982.

> The elderly are the ones who show the highest incidence of adverse drug reactions. In view of this, it is unfortunate that most drug testing is done

either on young volunteers or young animals and the results extrapolated to other age groups. Many of the factors which determine drug responses are different in the elderly such as pathophysiology, pharmacokinetics and pharmacodynamics. If a drug is intended for use in the elderly, the clinical effects should be tested in that age group.

Bowman, M.C. et al. A "marker" technique to monitor treated industrial wastewater effluents. *Sci Total Environ, 24,* 158-75, 1982.

At the present time the testing of effluents from wastewater is done to determine if harmful substances have been adsorbed by carbon and XAD-2 resin. The authors propose replacing this technique with one which measures the efficiency of the adsorbants at given intervals. A "marker" such as gentian violet should not appear in the effluent if the adsorbants are operating efficiently. Therefore the appearance of the "marker" would signal the need for a change of adsorbants. This technique is presented as a "...cost effective alternative to extensive and laborious chemical assays."

Dewar, A.J. Neurotoxicity testing with particular reference to biochemical methods. *Test Toxic, [Pap. Easter Sch],* 199-217, 1981.

This review discusses many references and includes evaluation of the neurotoxicity of methanol.

Anderson, F.A. Photochemical toxicity: toxic, allergic and carcinogenic aspects with emphasis on predicting effects in humans--an introduction. *JNCI, Vol 69 Issue 1,* 1982.

Weisbrod, D. Practical experience in the determination of acute dermal toxicity (LD50). Tasungsber.-Akad. Landwirtschaftswiss. D.D.R.; Vol 187, ISS Hys.-Toxicol. Qualitaetssicher. Ernteprod. Anwed.Pflanzschutzm. Mitteln Steuer. Bio. Prozesse, 211-17, 1981.

This study compares the use of open and closed methods for testing the dermal toxicity of compounds in rats. The open method requires the painting of the compound directly upon the shaved skin while the closed method applies a pad of gauze and foil impregnated with the compound. "The open method was not more sensitive than the closed method for compounds with higher toxicity." (oral LD50 greater than 1500mg/kg). The author emphasizes that six animals is too small a sample for statistical analysis. He recommends that in using the closed method the bandage be removed as well as all traces of the compound on the skin after 24h.

Schneider, B. [Drug safety and therapeutic index/Principals of pharmacological screening and of the clinical transferability of animal experiments results (authors translation)]. *Arzneimittelforsch, 32*, 471-4, 1982.

The major effort of preclinical screening must be to establish effectiveness and relative toxicity. The author compares the therapeutic index as defined by N. Brock (the ratio of the toxic to the curative properties) to the so-called "coefficient of danger"- an approximately equivalent measure. A preclinical screening procedure is suggested which allows "...decisions with preassigned error probabilities at minimum experimental effort." A posteriori probability according to Bayes' theorem is proposed as a reliability measure for clinical inferences.

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SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMH Iyy 590

PROJECT TITLE:

Case-Control Study of Formaldehyde Exposed Workers

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations and
Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: September 1985
Annual Funding:

PROJECT SUMMARY:

Recently attention has focused on the possible human carcinogenicity of formaldehyde. This concern has primarily arisen from the findings that inhalation of formaldehyde induces nasal carcinomas in rats. Several cohort mortality studies have been initiated to address this question including NIOSH's study of garment workers. Unfortunately, all of these studies are extremely limited in their statistical power to detect rare causes of death such as nasal cancer. This study will use a case-control approach which is particularly well suited for studying rare disease.

Cases and controls for this study will be drawn from an insurance fund's death benefit file. The company and union locals of the cases and controls will be asked to complete a questionnaire on formaldehyde and other occupational exposures that might be etiologically relevant. With this information, cases of respiratory cancer (e.g. nasal) will be compared to controls in terms of the frequency of formaldehyde and other occupational exposures.

In addition to the case-control study, part of the data set will be used to conduct a PMR analysis in which other causes of death can be examined. If excesses of other causes are found, additional case-control studies to determine the etiologic factors responsible will be considered.

CAS Registry No.
Formaldehyde 50-00-00

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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Environ Health Perspect; VOL 43, 1982, P139-68

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SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMH Iai 592

PROJECT TITLE:

Uranium Miners - Low Dose Study

INVESTIGATOR(S):

Robert Roscoe

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations and
Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: December 1984
Annual Funding:

PROJECT SUMMARY:

Since the early 1950's, NIOSH and its predecessors have been studying a cohort of 4000 uranium miners to determine the adverse health effects of radon daughters and other exposures. Dose response relationships between radon daughter exposure and lung cancer have been established and used to set federal regulations.

Uranium millers are exposed to uranium, vanadium, and thorium-230. The latter radio-nuclide is of particular interest because it concentrates particularly in the tracheobronchial tissues and lymph nodes. In fact, an earlier small NIOSH study of uranium millers found an excess of lymphomas.

During FY'82 extensive analysis was undertaken and a final report written on the uranium miners cohort followed through 1977. These analyses explored longer latency effects of radon daughter exposure such as multisite carcinogenicity and interaction with cigarette smoking. In addition, a final report of the uranium millers cohort tested hypotheses of excess mortality due to lymphomas, nephritis and nephrosis.

During FY'83 and beyond, NIOSH and NCI will concentrate our efforts on those receiving low doses of radon daughters and on sputum cytology as a screening tool for lung cancer. These efforts will require extensive questionnaire follow-up of the cohort for work histories, smoking and mortality.

These projects are important to NIOSH's efforts: 1) to reevaluate the current standard for radon daughter exposures; and, 2) to assess health implications of energy industries. As nuclear energy plays a larger role in the U.S., more and more workers will be involved in these industries.

CAS Registry No.
Thorium-230 14269-63-7

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SUPPORTING ORGANIZATION: National Institute for Occupational Safety and Health	**SUPPORTING ORGANIZATION NUMBER(S):** Contract No: and/or Control No: VMH Myy 593
PROJECT TITLE: Mortality & Industrial Hygiene Characterization of Workers Exposed to Lead Chromate Paints	
INVESTIGATOR(S): Marie Haring	**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION** Division of Surveillance, Hazard Evaluations and Field Studies
PERFORMING ORGANIZATION: Name and Address, Including Zip Code: National Institute for Occupational Safety and Health 4676 Columbia Parkway Cincinnati, Ohio 45226	**PERIOD FOR THIS NRP:** Start Date: October 1982 End Date: September 1985 Annual Funding:

PROJECT SUMMARY:

Studies of pigment manufacturers exposed to zinc and/or lead chromate and painters exposed to zinc chromate have found increased mortality from malignant neoplasms of the respiratory system. One manufacturer of farm equipment in the United States has continuously used lead chromate paints since the beginning of the company 100 years ago. A retrospective cohort mortality study and a characterization of painters' work environment will be conducted to determine if exposure to lead chromate based paints causes increased mortality from lung cancer among exposed painters and to document the levels of chromium associated with the increased mortality.

CAS Registry No.

Zinc chromate 13530-65-9; 12018-19-8; 14018-95-2
Lead chromate 7758-97-6

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Control No: VMH Myy 594

PROJECT TITLE:
Ethylene Oxide Mortality Study

INVESTIGATOR(S):
Kyle Steenland

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations and
Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: September 1985
Annual Funding:

PROJECT SUMMARY:

Ethylene oxide is used to sterilize hospital equipment by industrial companies which sell hospital supplies. We propose to study the mortality experience of individuals who have been exposed while sterilizing. From two animal and two human studies, it appears that ethylene oxide is a leukemogen. Excess mortality in one human study was found for leukemia, stomach cancer, all cancers, and cardiovascular disease. However, all human studies done so far are flawed by small sample size and mixed exposures, problems which we hope to overcome in our study.

CAS Registry No.
Ethlyene oxide 75-21-8

TOX-TIPS DECEMBER 1982 79-17

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NOTICE OF RESEARCH PROJECT
TOX-TIPS

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Toxicology Information Program
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SUPPORTING ORGANIZATION:
National Institute for Occupational Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMO Byy 622

PROJECT TITLE:
Estimation of Occupationally Related Mortality and Morbidity

INVESTIGATOR(S):
John Morrison

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance, Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: September 1984
Annual Funding:

PROJECT SUMMARY:

The purpose of this project is to develop and implement the necessary methods to estimate occupationally related mortality and morbidity. Data are not readily available to make such estimates; the current estimate of 100,000 occupationally related deaths per year, which appeared in the President's Report on Occupational Safety and Health for 1971, is a frail one. Such estimates are necessary to: (a) determine the magnitude of the problem so that comparisons can be made between occupational health and other health problems, (b) determine the nature of the problem so that input can be made in the priority process, and (c) assess change to assist in determining program efficacy. To meet these needs, the following objectives have been set forth:

1. Evaluate the scientific literature and establish a data base which defines the array of occupationally related mortality and morbidity.
2. Develop and assess methods for estimating occupationally related mortality other than accidents.
3. Establish a working definition of morbidity and develop a proper taxonomy to characterize the problem.
4. Develop and assess methods for estimating occupationally related morbidity other than accidents.

This project will provide data to be used in priority setting areas at various levels including: budget justifications; Congressional testimony; development of programs and projects at the federal, state, and local government levels, as well as the public levels--unions, industry, and special interest groups.

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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AM J EPIDEMIOL; 115 (5). 1982. 720-728.

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Lancet; VOL 2, ISS 8298, 1982, P606

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NOTICE OF RESEARCH PROJECT

TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

Chemical Manufacturers Association (CMA)
2501 M Street, N.W.
Washington, D.C. 20037

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

CMA Biomedical and Environmental Special Program: Ethylene Oxide

INVESTIGATOR(S):

For further information contact:

Chemical Manufacturers Association
Biomedical and Environmental Special Programs Division

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Telephone (202) 887-1100

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

For chemicals widely manufactured by industry, some companies jointly sponsor research to avoid duplication and to pool resources. CMA's Biomedical and Environmental Special Programs Division is a vehicle for many of these collaborative efforts. New developments from the Special Programs Panels in FY 1981-1982 were reported in CHEMECOLOGY, November 1982. The following information was included on page 6 of this CMA publication:

> Ethylene Oxide-A negotiated study plan for testing of this chemical, under provisions of the Toxic Substances Control Act, was submitted by the Ethylene Oxide Industry Council to the Environmental Protection Agency. The chemical is being studied for potential health effects.
>
> Ethylene oxide is used to manufacture consumer products like antifreeze, as a raw material for fibers and as a sterilant gas in the health care field.

CAS Registry No.
Ethylene oxide 75-21-8

TOX-TIPS DECEMBER 1982 79-21

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

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Mutational consequences of exposure to ethylene oxide.
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Toxicology Research Projects Directory, Vol.05 iss.03 1980
Epidemiology Research Projects Directory, 1980

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NOTICE OF RESEARCH PROJECT

TOX-TIPS

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8600 Rockville Pike Bethesda, Maryland 20209
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SUPPORTING ORGANIZATION:
Chemical Manufacturers Association (CMA)
2501 M Street, N.W.
Washington, D.C. 20037

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
CMA Biomedical and Environmental Special Program: Glycol Ethers

INVESTIGATOR(S):
For further information, contact:

Chemical Manufacturers Association
Biomedical and Environmental Special Programs Division

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Telephone (202) 887-1100

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

For chemicals widely manufactured by industry, some companies jointly sponsor research to avoid duplication and to pool resources. CMA's Biomedical and Environmental Special Programs Division is a vehicle for many of these collaborative efforts. New developments from the Special Programs Panels in FY 1981-1982 were reported in CHEMECOLOGY, November 1982. The following information was included on page 6 of this CMA publication:

> Glycol Ethers-These chemicals are being studied for possible reproductive effects using rats and rabbits as the test species. The Panel is conducting an inhalation study of ethylene glycol monoethyl ether to determine the "no-effect" level for malformations. Three other chemicals, ethylene glycol monoethyl ether acetate, ethylene glycol monomethyl ether and ethylene glycol monobutyl ether, also are being tested for teratogenic effects.
>
> The Panel is conducting a 90-day inhalation study for ethylene glycol monomethyl ether to determine a "no-effect" level for testicular changes.
>
> Glycol ethers are used mainly as solvents.

CAS Registry No.
Ethylene glycol monoethyl ether 110-80-5
Ethylene glycol monoethyl ether acetate 111-15-9
Ethylene glycol monomethyl ether 109-86-4
Ethylene glycol monobutyl ether
111-76-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

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NEUROTOXICOLOGY (PARK FOR SOUTH); 2 (2). 1981 (RECD. 1982).
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AND RABBITS
TOXICOLOGIST; 1:30,1981

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TERATOLOGY; 25(2):46A,1982

NOTICE OF RESEARCH PROJECT

TOX-TIPS

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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Services
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10178-C
NCI No. C60128

PROJECT TITLE:

Tests for toxicologic and carcinogenic effects: Status of Tris(2-Chloroethyl) Phosphate

INVESTIGATOR(S):

For further information, contact:

Dr. H. Matthews, Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
Microbiological Associates
5221 River Road
Bethesda, MD 20816

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay tris(2-Chloroethyl) phosphate is being administered by gavage to rats and mice. Chronic testing began September 1982. (See also TOX-TIPS, April 1981, 59-27.)

CAS Registry No.
Tris(2-chloroethyl) phosphate 115-96-8

TOX-TIPS DECEMBER 1982 79-25

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Matthews H
CARCINOGENESIS BIOASSAY OF TRIS(2-CHLOROETHYL) PHOSPHATE
Toxicology Research Projects Directory, Vol.06 iss.09 1981

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[Experimental study of the gonadotoxic effect of tri-(chloroethyl)-phosphate]
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J Toxicol Environ Health; VOL 8, ISS 3, 1981, P507-18

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CLIN TOXICOL; 17:101-131,1980

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CHEMOSPHERE; 11 (3). 1982. 263-276.

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DOKL BIOL SCI; 134:748-750,1960
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LOWN J ; JOSHUA AV ; MCLAUGHLIN LW
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J MED CHEM; 23:798-805,1980

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DEV TOXICOL ENVIRON SCI; 2:249-258,1977

PRIVAL MJ ; MCCOY EC ; GUTTER B ; ROSENKRANZ HS
TRIS(2,3-DIBROMOPROPYL)PHOSPHATE: MUTAGENICITY OF A WIDELY USED FLAME RETARDANT
SCIENCE; 195:76-78,1977

NOTICE OF RESEARCH PROJECT
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SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10041-V
NCI No. C55663

PROJECT TITLE:
Tests for toxicologic and carcinogenic effects: Status of Epinephrine Hydrochloride

INVESTIGATOR(S):
For further information, contact:

Dr. C. Grieshaber, Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code. Battelle Pacific Northwest Laboratory
Richland, WA 99352

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, epinephrine hydrochloride, a bronchodilator, is being administered by inhalation to rats and mice. Chronic testing began September 1982. (See also TOX-TIPS, October 1980, 53-29).

CAS Registry No.
Epinephrine hydrochloride 55-31-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Malyugina LL ; Pol'kina RI ; Remizov AL
Antineoplastic action of some derivatives of adrenalones
Khim.-Farm. Zh.; VOL 13, ISS 7, 1979,56-8

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Response of cell division in Ehrlich ascites tumor of mice to adrenaline
Byull. Eksp. Biol. Med.; VOL 91, ISS 1, 1981,69-71

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Toxicology Research Projects Directory, Vol.06 iss.03 1981

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MUTAT RES; 69:149-155,1979

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J. Lipid Res.; VOL 22, ISS 7, 1981,1084-93

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Inhibiting effect of adrenaline on the acetylcholinesterase activity of skeletal muscle sarcolemma
Biokhimiya (Moscow); VOL 46, ISS 9, 1981,1558-63

Yano S ; Hoshino E ; Harada M
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Jpn. J. Pharmacol.; VOL 31, ISS 1, 1981,117-24

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Comparative pharmacological study on d,l-adrenaline dipivalate hydrochloride and l-adrenaline hydrochloride after local and oral application
Arzneim.-Forsch.; VOL 31, ISS 2, 1981,325-34

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COLD SPRING HARBOR CONF CELL PROLIFERATION; 4C:1549-1557,1977

NOTICE OF RESEARCH PROJECT

TOX-TIPS

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8600 Rockville Pike Bethesda, Maryland 20209
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SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No; and/or Control No: NTP No. 10130-N
NCI No. C55630

PROJECT TITLE:

Tests for toxicologic and carcinogenic effects: Status of Isoproterenol Hydrochloride

INVESTIGATOR(S):

For further information, contact:

Dr. E. Van Stee, Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Testing of isoproterenol hydrochloride has been terminated. Epinephrine, another bronchodilator, is on test. (See TOX-TIPS, May 1981, 60-13, TOX-TIPS, December 1982, 79-27).

CAS Registry No.
Isoproterenol hydrochloride 51-30-9

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

BURNS E
CHRONOBIOLOGICAL STUDY OF THE EFFECTS OF A SINGLE INJECTION OF ISOPROTERENOL ON MITOTIC INDEX AND/OR DNA SYNTHESIS IN NORMAL AND NEOPLASTIC CELL POPULATIONS
GROWTH; 42:333-346,1978

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Circ. Res.; VOL 48, ISS 1, 1981,112-20

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Toxicology Research Projects Directory, Vol.07 iss.01 1981

Van Stee E
CARCINOGENSIS BIOASSAY OF ISOPROTERENOL HYDROCHLORIDE
Toxicology Research Projects Directory, Vol.06 iss.10 1981

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C-6 glioma growth in rats: suppression with a beta-adrenergic agonist and a phosphodiesterase inhibitor
Ann. Neurol.; VOL 8, ISS 4, 1980,447-9

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Systemic and regional hemodynamic responses to isoprenaline in conscious renal hypertensive rabbits
Clin. Exp. Pharmacol. Physiol.; VOL 8, ISS 3, 1981,227-39

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Effects of aspirin, indomethacin, sulfinpyrazone and propranolol on the isoproterenol-induced myocardial necrosis
Prostaglandins Thromboxanes, Proc. Int. Symp. Prostaglandins Thromboxanes Cardiovasc. Syst., 3rd; 1981,27-32

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Catecholamine-mediated diuresis in turkeys
Proc. Soc. Exp. Biol. Med.; VOL 167, ISS 1, 1981,1-5

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Impaired cardiac contractile response to isoproterenol in the spontaneously hypertensive rat
Hypertension (Dallas); VOL 3, ISS 3, 1981,380-5

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State of alphal- and betal-adrenergic reactions during cold acclimation
Fiziol. Zh. SSSR im. I. M. Sechenova; VOL 68, ISS 1, 1982,34-8

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Modulation of experimental doxorubicin skin toxicity by beta-adrenergic compounds
Cancer Res.; VOL 41, ISS 6, 1981,2428-32

ANNUAL INDEX OF COMPOUNDS

This Annual Index lists compounds under test and those for which tests have been completed and published during 1982. Citations for compounds announced as under test give the issue number and page for TOX-TIPS.

A new Index of Compounds for 1983 will begin in the January issue of TOX-TIPS.

- Acetaldehyde
  - Hamster - inhalation - carcinogenicity...68:19
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